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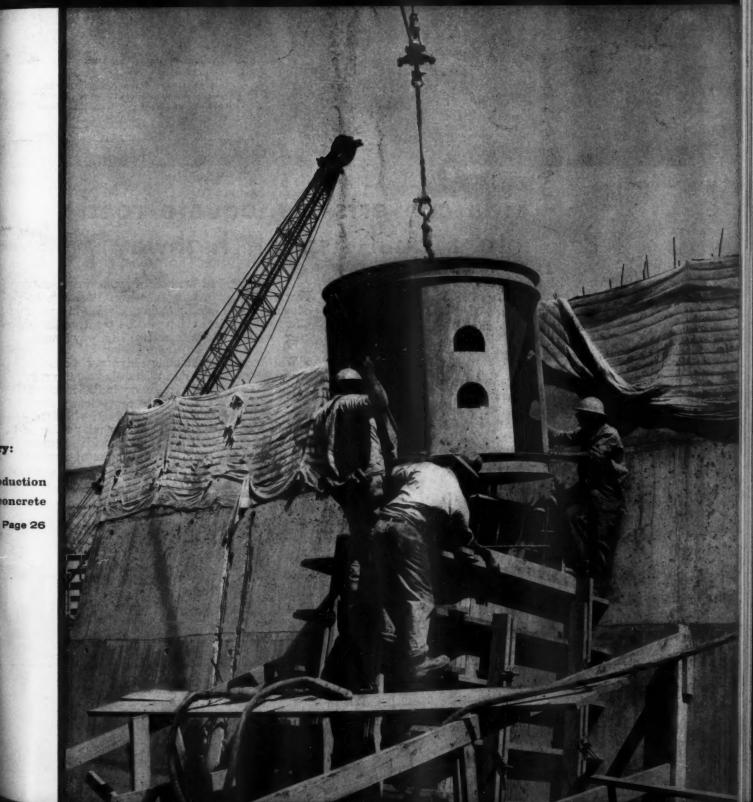
SCIENCES

10 Flagstone for tilt-up panels - at half the cost of masonry work

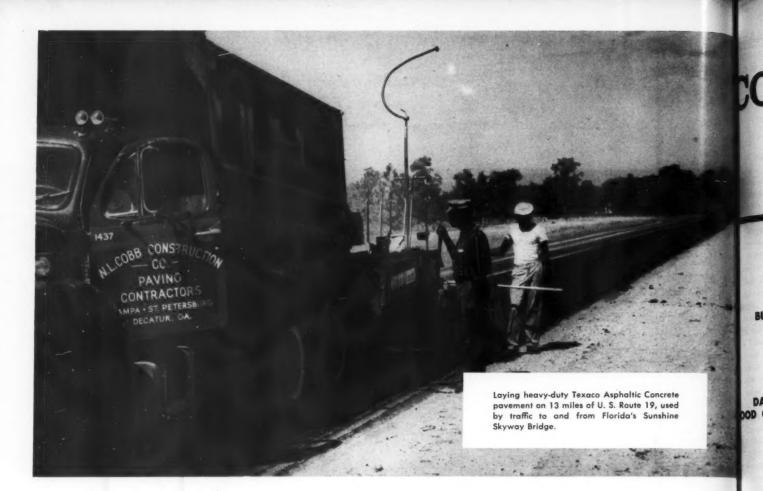
56 Mountain-climbing rigs build power penstock - picture story

102 Shoulders built to last - with bases of soil-cement

# ONTRACTORS and ENGINEERS



duction



# Florida converts inadequate road into a dual Asphalt highway

When Florida built the new Sunshine Skyway Bridge over Tampa Bay, U. S. Route 19 in Pinellas County could not cope with traffic to and from the bridge. The State remedied this by converting the old 24-foot road into a modern, divided Asphalt highway.

A new 24-foot lane was constructed for northbound traffic. Its heavy-duty surface of hot-mix Texaco Asphaltic Concrete was laid on an 8½-inch limerock foundation, over a 12-inch stabilized subgrade. Hot-mix Texaco Asphaltic Concrete also was used to resurface the existing road, which now serves southbound traffic. This economical method of using heavy-duty Texaco Asphalt paving to convert existing, inadequate roads into up-to-date, divided highways offers substantial savings in the construction of many sections of the Interstate Highway System. H

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# CONTRACTORS and ENGINEERS

Contents

1960 May

BRIDGES 58 A prestressed bridge with a heated deck Ten floating derricks beat schedule on Throgs Neck piers BUILDINGS 10 Flagstone tilt-up slabs—at half the cost of masonry work 13 Substructure work is complex at atomic power plant 80 Unique dome is web of precast-concrete shapes 142 Job-built jacks handle prefabricated roof forms DAMS AND Trucks winched backward down slope to place Oahe riprap D CONTROL Automatic controls hike plant capacity 18 yards per hour Special equipment helps contractor on Niagara project 56 Mountain-climbing rigs build power penstock GENERAL 30 Intricate structural work to depress road under subway 88 Trades boost sales for New Jersey dealer 168 Scrapers are pulled and pushed to load on levee job 16 Ripped and blasted rock is loaded by scrapers **HIGHWAYS** 44 Shovel fleet digs in to move 4,000 yards of rock daily 96 Precise work meets tight spex on hot-mix contract 102 Shoulders built to last on soil-cement bases 158 Prewet excavation saves on costly manipulation MAINTENANCE 34 Tire maintenance is everybody's job MANAGEMENT 149 Roads and bridges: Proposals and contracts MEETINGS 22 Bid peddling, labor, legislation spark AGC convention 164 Earthmovers under the spotlight PAVING 104 Unique crushing layout increases CTB, hot-mix output 172 Float-finisher handles two jobs on concrete paving

111 Description of new equipment and materials



Slip-forming dike filters.



Precast units for dome.



Unique plant has high output.



This concrete-placing crew empties a Dillon 2.2-yard bucket for a wing wall at Iron Bridge Dam, Dallas. At the rear, concrete is curing under wet cotton mats. Pro-duction increased from 40 to 58 yards per hour after installation of semiautomatic controls in the plant. Page 26

146 Listing of available literature

## **DEPARTMENTS**

- 68 Avoid Legal Pitfalls 5 Business Comment 150 Construction Camera Convention Calendar
- Distributor Doings
  - Editorial
- 6 Industry Trends
- 46 Labor Review
- 48 Manufacturer Memos
- 64 Names in the News
- Surveying Washington
- 20 Tricks of the Trade

# One, or separate contracts

Ten years ago we published an editorial, "One Building-One Contract," contending that it was better for the owner or agent to have one general contractor responsible for the construction of a building than to have sundry subcontractors working under separate contracts and under separate responsibilities. In that year, 1950, the Associated General Contractors of America, at its annual convention held in San Francisco, adopted a resolution calling for a single allinclusive general contract on a project, so that responsibility and coordination could be centralized in one competent organization.

Convention resolutions are generally well meaning statements representing the feelings and opinions of the majority of the delegates in attendance. It does not necessarily follow that such adopted resolutions are carried out. Unless they are further implemented by rules and regulations of the industry as a whole, or made into a law of the land, they may remain nothing but high-sounding platitudes.

At the 1960 AGC convention in March, also held in San Francisco, the Building Contractors' Division was still trying to solve the old problem of receiving and handling sub-bids. Bid peddling by subcontractors and bid shopping by prime contractors have not been eliminated: such unethical practices, in fact, are now on the increase. One delegate related how an out-of-town contractor came into his community, got himself a general contract to construct a building, rented an expensive suite in a swanky hotel, and put up a chalkboard on which he designated how much he would pay the subcontractors and material vendors. He shopped and shopped for bids until he found enough subcontractors to take the various parts of the job at prices for which the general contractor claimed the work could be done.

The building was finished, but many of the subcontractors were also finished-financially. Any profit accruing to the prime contractor was not included in his bid at the beginning, but was acquired piecemeal-5 to 10 per cent-from the work of his many subcontractors. Another delegate had a similar grievance, complaining that such procedures in his city had reacted against his getting a job hon-

Practices like that give the con-

struction industry a bad name before the public, and already eight states have taken steps to eliminate the evil by requiring that separate contracts be let on public works instead of one general contract. Pressures are also being exerted to increase the use of separate contracts in private as well as public works. In many states, more private work is done under separate contracts than by the single contract method.

With this bogey of separate contracts confronting the contractors. backed by state or even federal legislation, one would natually expect the contractors to close ranks and unite for concerted action to deal summarily with such threats. An attempt was made to get the general contractors to cooperate with the architects and with the specialty contractors; to have the subs submit their bids prior to the prime bid; and for the generals to list the names of their sub-bidders. But this well meaning attempt did not come off. As one delegate put it: "A contractor does not want anyone telling him how to run his business."

A joint cooperative committee of the AGC and the Council of Mechanical Specialty Contracting Industries had got together with a plan including the objectives just stated. This plan, however, was tabled by AGC's Governing and Advisory Board, Later. at a session of the Building Construction Division, the plan was discussed lengthily, heatedly, albeit incoherently, as each protagonist took to the microphone with so forensic a display of oratory, that it was often difficult to tell whether the speaker was for or against the measure.

Each appeared to be speaking purely in his own interests, with little thought to the effect on the industry in general or even on his own association. While the group of building contractors passed the measure by a close vote, the teeth were taken out of the plan at the closing general session. There the resolutions committee submitted a watered-down version of the subcontractor bid plan that omitted any recommendation to the American Institute of Architects, and referred the plan to local AGC chapters, and then only when their own local subcontractor groups would support the single contract system of construction.

Contractors have every right to be individualistic, but in this case it looks as if they were being too much so for their own good.

# CONTRACTORS and ENGINE

470 Park Ave. South, New York 16, N.Y. A BUTTENHEIM PUBLICATION

Publisher

Robert C. Burton

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Overview

Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 57, No. 5, \$5 a year, \$1 a copy in the United States and Canada. \$8 a year in other countries. Issued search!

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# **Business Comment**

# Manpower

ATION

It takes 48,000 men supplying at least 50 different skills to bee a billion dollars' worth of highway and bridge contracts under construction. The payroll for that amount of work comes to about \$4,650,000 a week. This is how the various occupations proived share that payroll, according to new labor-usage figures released recently by the Bureau of Public Roads.

Equipment operators as a group take the lion's share of pay—41 per cent—and contribute 38 per cent of the man-hours. Truck drivers constitute the largest labor-cost factor among the 16 classifications of operators employed in highway work.

They lead not only all other operators but also all other individual occupations, accounting for almost 12 per cent of hours worked and 11 per cent of wages paid.

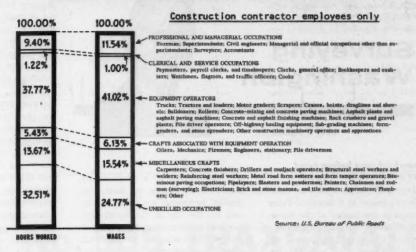
Tractor, grader, scraper, and powergrane operators each contribute from about 4 to 5 per cent of man-hours and collect 41/2 to 51/2 per cent of vages. Roller operators are credited with slightly under 2 per cent of both boors and wages. The remainder of the total of 16 operator classifications counts for less than 1 per cent. Apmentices—lowest on the pay scale are credited with .03 per cent of manhours and .02 per cent of total wages. Other crafts associated with equipment operation - oilers, mechanics, en, stationary engineers, and pile-driver men-take up another 5 per cent of hours worked and 6 per cent of wages.

Altogether, operation and care of equipment requires 43 per cent of the man-hours it takes to build a road and consumes 47 per cent of the payroll.

To derive this labor-usage data the BPR studied 3,358 federal-aid projects having a total contract value of 42,216,343,000. It analyzed the portions of these jobs that were under construction during the 4-week period from July 13 to August 9, 1958. The share of each occupation was determined by tabulating the distribution of 17,015,102 man-hours worked and 41,257,904 of wages paid during that period.

Next to the equipment operators, unskilled laborers contribute the greatest number of man-hours to the road construction process. They work nearly one-third of the hours recorded, but receive a disproportionately low one-fourth share of wages. A variety of "miscellaneous" crafts -carpenters, concrete finishers, drillers, steelworkers, pipelayers, blasters, and painters, among others-accounts for another 14 per cent of man-hours and 16 per cent of wages. Just under 12 per cent of the payroll goes to the professional and managerial staff needed to supervise construction. These higher-level occupations account for a little over 9 per cent of all man-hours. The foremen predominate with nearly 6 per cent of the hours worked and over 7 per cent of wages. Superintendents unt for 21/2 per cent of hours and over 3 per cent of payroll.

## LABOR USAGE IN HIGHWAY CONSTRUCTION



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Then, from a complete line of the world's toughest earthmover tires, they'll recommend the most efficient and lowest-cost tire to do each job right. These tires, with a super-tough body built with 3-T Nylon Cord and specially compounded tread rubbers of unequaled toughness, cope with tremendous loads, endless flexing, cutting and chipping dangers—provide amazing durability.

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### With BIG TIRE PERFORMANCE Example: SUPER HARD ROCK LUG

Here's a typical Goodyear big tire for big jobs—the new Super Hard Rock Lug (pictured). This wide-base off-roader has a new "square" shoulder design with extra-thick rubber for terrific traction bite and longer wear. Yet its cost is the same as ordinary wide-base tires.

Get in on all this—see your Goodyear dealer now! Or write Goodyear, Truck Tire Dept., Akron 16, Ohio.



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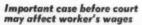
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# Surveying Washington

by E. E. Halmos, Jr.



Have your lawyer look very carefully at a major U.S. Supreme Court decision in the matter of the Secretary of Labor v. H. B. Zachry Construction Co. (Appellate Docket No. 83). It will have a lot to do with the wages you pay your workers.

The high court's opinion says that construction of a water-supply dam in Texas is not a matter in interstate commerce, despite the fact that some of the water goes to industrial users. And the decision implies two other things of great significance to contractors: (1) that original construction of any new plant, dam, or other structure is not in interstate commerce; (2) that there are apparently large areas in this regard where wage-and-hour laws are not applicable.

Involved in the action is a Zachry contract of \$6 million with the Lower Nueces River Water Supply District for construction of a reservoir on that river (replacing an older and smaller reservoir) for water-supply uses for the city of Corpus Christi. Because an estimated 40 to 50 per cent of the water goes to industrial users, who manufacture goods for sale in interstate commerce, the Labor Department obtained a district court injunction to force Zachry to keep required wage-hour records on his construction workers.

The district court granted the injunction on grounds that: (1) the water from the dam is supplied to "instrumentalities of commerce." hence those engaged in building the are engaged in producing "goods"—water—for commerce; (2) since the water is essential to industries in Corpus Christi, construction of the dam is "an occupation closely related and directly essential" to interstate commerce.

The U. S. Court of Appeals, how-

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1959

ever, reversed the injunction. It held that the building of the dam "could not of itself constitute production of goods for commerce," whatever the use to which the water might be put. On the second point, the appeals court ruled that "those engaged in building a plant . . . do not even come within . . . the statutory definition [of wage-hour laws]" and concluded that the "remoteness" of these jobs from production processes further justified exclusion from coverage.

Said the high court: "The maintenance and repair of the completed dam might be assumed to be covered employment. But it does not follow that construction of the dam . . . is."

Washington legal experts caution that the Supreme Court made its decision on the basis of this particular case. But the court itself obviously placed considerable weight on the effects of its decision, and it is apparent that the decision will be applied to other instances in the construction industry.

### Internal Revenue arques cases for taxing "gifts"

If you give or receive gifts as part of your business operations, there's a group of three cases now before the Supreme Court that will have great effect on the taxes you pay.

The cases involve the gift of an expensive automobile to a businessman who had "suggested" possible customers to the giver: a \$20,000 gratuity to a retiring church official;

and extra payments to a striker.

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Said attorneys for the Inter Revenue Service: The status of voluntary gift that might be excha able from the recipient's gross inco should be determined by the motion not the intent-of the giver. II to motive is services received, then to "gift" is not a gift.

# Highway program giving boost to toll-road work

Nearly everyone thought that enstruction of toll roads would be a dead as the proverbial dodo, once the federal-aid highway program (interstate) got rolling.

Suddenly, it appears that the tall idea is very much alive.

Maryland's highway con



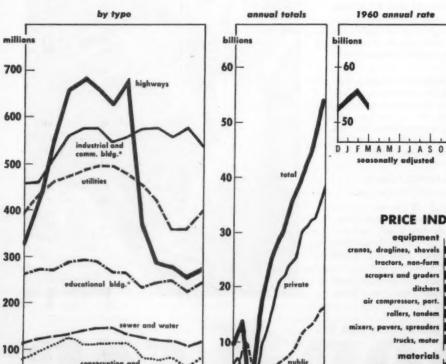
John B. Funk said, at an engineer society meeting recently, that his state has already initiated studies looking toward construction of the planned Northeast Expressway, paralleling Route 40 between Baltimore and the Delaware line, as a toll road, Delaware, he said, is also studying a tell

# Industry Trends

nally adjusted

# **DOLLAR VALUE OF NEW CONSTRUCTION**

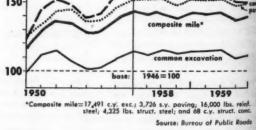
Recent Monthly Trends

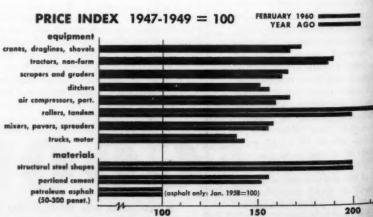


1960

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# AVERAGE BID PRICES Federal Aid Highway Construction annual recent quarters 150





ce: Bureau of Labor Statistics' Wholesale Prices and Indexes

1959

ned from the state line to the Delasare Memorial Bridge.

Tell financing seems to offer a sicker way to get funds and get the construction started than waiting for ideral allotments to build a road as an interstate route. And the prospect is that, once the road is built, the sale can later get the money back and pay off the bonds by having the modi included in the Interstate System.

# Racial reports on hiring to battle discrimination

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Be prepared for a lot of paperwork as federal construction agencies prepare to comply with "recommendations" about records of racial discrimination on government construction work.

What's contemplated is this: Prime contractors will have to report—and be responsible for subcontractors' reports—on racial detail on hiring, firing, promotion, and demotion of construction labor on federal projects each month; on their planned hiring schedules; and on subcontractors' qualifications required for workers to be hired in each trade.

The plan is an outgrowth of a recent fuss, right in Washington, over the asserted refusal of local unions to refer Negro workers for skilled trades on construction jobs.

# Big construction plans made by public utilities

The place to look for new business is definitely among the nation's public-utility companies. During the month of March alone, they reported construction plans for the rest of 1960 and into 1962 totaling more than \$1.1 billion.

Electric utilities reported that they now have plans under way for more than \$965 million worth of construction; gas and pipeline companies reported plans during the month for \$257.3 million worth of work.

The biggest electric-utility program was a 4-year \$700 million plan by Commonwealth Edison of Chicago; next in line was a \$169 million program for 1960-61 by Alabama Power.

# Congress holds line on ABC-system appropriations

On highways, you'll note that Congress seems to go along with the President, this year, on appropriations for the ABC (primary, secondary, and urban) system. President Eisenhower asked Congress not to raise the appropriations this time by the annual \$25 million that has been the custom for the past several years. Congress seems willing to go along; the House has okayed a 2-year appropriation of \$925 million each year, instead of the \$950 million that might have been approved.

Credit for this goes to Rep. George Pallon (D., Md.). He wants to hold things as they are, at least until 1961, when the Bureau of Public Roads brings in its reports on user charges and many other matters. Fallon, like the Senate's Harry Byrd, expects Congress to virtually rewrite the highway bill in 1961 on the basis of those reports.

# Nuclear blasting under test for use in construction

Construction men have a primary interest in "Project Plowshare" and other programs for peaceful uses of nuclear energy now being pushed by the Atomic Energy Commission. Nuclear explosives for major excavation work may become commonplace in the relatively near future. The reason: development of "clean" processes to make such use fairly safe.

AEC's first experiment in this line will be a series of underground ex-



plosions, planned for next year, in a tunnel in the New Mexico salt beds. (The tunnel will cost about \$1.1 million to build.) And AEC scientists expect to be able to use nuclear blasting for a number of purposes: to create artificial harbors at one blow, with a charge costing no more than \$500,000; to reach new sources of underground water; to create huge underground water reservoirs; and to build canals, such as the long-proposed "second Panama Canal" in Central

# **CAT No. 955 TRAXCAVATOR**



# "Gets the work done wherever you put it!"

-G. K. JONES, CONTRACTOR, WACO, TEXAS

That's how Mr. Jones, who has used Caterpillar-built equipment for years, sums up the performance of his No. 955 Traxcavator. Here you see it loading old broken concrete on a subcontracting job on U. S. 81. Loading pit run gravel on another section of the job, it handled 1000 yards a day in difficult digging. "The No. 955 sure can take it," Mr. Jones said. "It's tough and durable."

### Now an even stronger No. 955

As rugged as this No. 955 is, the most recent model is even more rugged. It has been strengthened from lift arms to tracks to deliver an even longer life of profitable performance. Consider the undercarriage, for instance. It now features lifetime lubricated rollers and idlers that need no lubrication service until rebuilding. This completely eliminates on-the-job lubrication of these parts. Another plus: Hydraulic track adjusters are now standard on the No. 955. An ordinary grease gun is all that's needed to adjust tracks. Along with these and other improvements the No. 955 retains such time-tested features as the exclusive oil clutch which provides up to 2000 hours without adjustment.

### **Top production from 3 Traxcavators**

Whatever your job, there's a Traxcavator to fit its requirements: The 955E-70 HP, 1½ cu. yd. bucket; the 933F-52 HP, 1½ cu. yd. bucket; the 977E-100 HP, 2¼ cu. yd. bucket. There's also a complete line of quick-change attachments to increase its usefulness on your job-special buckets, bulldozers, forks, the rear-mounted ripper and the exclusive side dump bucket. Let your Caterpillar Dealer help you select the Traxcavator that will pay off best for you. Want a demonstration? Just name the place and date!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

# CATERPILLAR Colorpiller, Cut and Transporter on Engineer I Transporter of Colorpiller Tractor Co.



For more facts, use Request Card at page 18 and circle No. 253

GINEERS



Slope protection at Oahe Dam done with

Trucks wind

A truck is being winched down the upstream slope of Oahe Dam to dump riprop that will be placed by the Insley crane with arange peel bucket. A fleet of 20 trucks is making the haul to the embankment.

An effective—and unusual—system of winching haul trucks down a 21/2 to 1 slope is being used in riprapping the upstream slope of Oahe Dam.

Located on the Missouri River about 6 miles north of Pierre, S. Dak., Oahe will be the world's largest rolled-earth dam. It will rise to 242 feet, and the 9.300-foot-long embankment will contain about 90 million cubic yards of shale and earth. Work on the dam and supporting works is about 50 per cent completed right now, with fill being laid and compacted at a rate of about 80,000 cubic yards every 24 hours.

Work on the filter blanket, spalls, and riprap is currently in progress. Upstream slope protection is being handled by Missourl Basin, Inc., Mitchell, S. Dak., which has tractors working about 14 miles from the dam site harvesting rock to provide riprap for the dam.

Missouri Basin leased this rock area from the landowners five years before the riprap contract was awarded; company officials later made the plan for harvesting the materials, transporting them to the construction site, and placing them on the 2½ to 1 upstream slope.

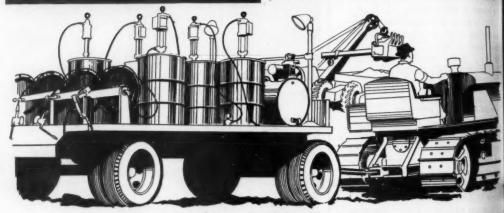
The firm is using two Allis-Chalmers HD-16G tractor shovels, an HD-11G, and six HD-16 tractordozers with rock rakes to move the boulders for loading into haul trucks. The larger boulders, some weighing as much as 5 to 10 tons, are shot to required specifications. Two of the HD-16G's with rock buckets, and sometimes the HD-11G, keep a fleet of 20 haul trucks loaded and on the move to the embankment site.

When the trucks arrive, a cable is secured to the front of the loaded vehicle and the truck is slowly winched, backward, down the slope to the deposit area. After the dump, the truck is winched back up the slope. As each truck deposits a load, a platform-mounted crane uses an orange peel bucket to distribute the rock.

This system has been very effective since riprapping operations started last May. Missouri Basin expects to complete its contract by June, 1961.

When Oahe Dam is finished, it will back up waters of the Missouri River for some 250 miles, and the reservoir will provide water for irrigation purposes in eastern South Dakota. The powerhouse, which will have seven 128,500-hp Allis-Chalmers hydraulic turbines operating under a 185-foot

# LUBE LOGIC Tips for moref



# Do-it-yourself lube rig trailer

Maybe you're aware of all the advantages of a mobile lube rig, but just don't want to tie up a truck for this purpose. Or, perhaps you'd like a supplementary rig. You can solve either problem neatly by mounting your field lubricating equipment on a standard 5-ton farm trailer. That way, you can take your whole simplified lube plan out into the field where it's needed, without costly deadheading back to a fixed service point - and you can move the lube rig just by hitching it to any truck, so it's just as mobile as a truck mounted at much less cost. And here's a bonus: by hitching your light trailer to a bulldozer, you can take field service to put that wouldn't be accessible to a regular truck

way to is to ke

Trailers for this purpose, as well as tanks and pumps, all standard items you assemble yourself to meet your o

# TEXACO LUBRICATION ENGINEERS ON THE JOB FROM COAST TO COAST



ROCKY REACH DAM AND POWERHOUSE on the Colu River, Washington (above). W. N. Evans (left), Manager for cky Reach Contractors, discusses Simplified Lubrication Plan with E. S. Saunders. Texaco Contractor Sales Representative

HOGBACK DAM, Riverton, Conn., (upper right) is part of the greater Hartford water supply system. Texaco man-on-the-job is H. F. Porter (left) shown with John Toffolon, Vice President, White Oak Contractors, Inc., General Contractors.

INTERSTATE HIGHWAY 80 PROJECT at Colfax, lowa (right). Texaco Engineer E. A. Howles (right) works closely with Mott Construction Company on the important assignment of keeping equipment on the job and maintenance costs low.



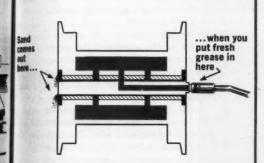


# wind slope to place riprap

This Allis-Chalmers HD-16G diesel tractor shovel with torqueconverter drive uses its rock bucket to load haul rigs. The rock harvesting is being done by two tractor shovels and six dozers in an area about 14 miles from the dam site.



# norefficient maintenance



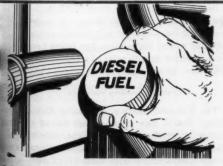
# Track-roll enemy No. 1: sand

If you're operating a crawler-tractor in sandy soil, the best my to keep sand from getting into the track-roll bearings is to keep purging the bearings with fresh grease. Track-roll bearing seals are especially designed for this type of purgebirication, and the grease that comes out around the edges of the seal during lubrication carries the sand out with it.



# How to read dipsticks without squinting

The modern inhibited motor oil that keeps the inside of your engine clean also keeps the oil dipstick clean—and often too shiny to read. Here are three solutions for this problem—take your choice. 1. Heat'the end of the dipstick so the metal darkens slightly. 2. Paint the end of the stick with a dull-finish cellulose lacquer. 3. Run the stick across the spark-plug cleaner to take off some of the shine. (If you use the spark plug cleaner, use the smallest rubber plug bushing and hold the dipstick over the hole with a wad of cloth to keep sand from scattering around the lube bay.)



# ldentify the fuel you want

In one absent-minded maintenance man put gasoline in the diesel tank and as the fliers say "you'll be bailing out more Denver." It's happened. Best way to avoid its happened to you is to mark your fill cap "Diesel Fuel" or Gasoline". Then nobody should make any mistakes.



TRUCK RECORD
FOLDER
fits itself
into your
schedule

Texaco's flexible new truck record folder lets you stick to the lube schedule that works best for you without running into bookkeeping problems. Lubrication and oil schedules are completely separate from mechanical maintenance and replacement parts schedule—you don't have to follow any pre-established routine to use the folder profitably. And this new folder accounts for every single dollar you spend on truck maintenance for a whole year. Write for your folders today.



Every month we'll bring you a batch of "sleepers", little angles, so easy to over-look, where big savings in money and time can be made. But month in, month out, your local Texaco Lubrication Engineer is the best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control."

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For more facts, use Request Card at page 18 and circle No. 254

head, will be capable of generating 595,000 kw of electricity to serve several midwestern states.

Oahe, one of the main-stem units of the Missouri River Basin development plan, known better as the Pick-Sloan Plan, will be operated in coordination with other projects at Fort Peck, Montana; Garrison, North Dakota: Big Bend and Fort Randall, South Dakota; and Gavins Point, South Dakota and Nebraska. These will provide flood protection for the Missouri River basin and will serve other purposes, including irrigation, navigation, hydroelectric power, domestic and industrial water supply. stream sanitation, and wildlife conservation.

### Personnel

G. E. Gulbranson, president of Missouri Basin, Inc., is the project manager on the job. The general superintendent is Verne Willeford, with Scotty Graff and Doug McQuade foremen at the embankment site and the harvesting site, respectively. Officials of the firm include George J. Lindekugel, vice president, and Marnel Lindekugel, secretary-treasurer.

Construction of Oahe Dam is under the supervision of the Omaha District of the U. S. Army Corps of Engineers, which has Col. David G. Hammond as district engineer. John W. Sibert, Jr., is Oahe area engineer directly in charge of the project. The prime contractor on the embankment earthwork is Western Contracting Corp., Sioux City, Iowa.

## Ford "Cavalcade" coming

■ A "Cavalcade" show, staged to display equipment of the Ford Tractor and Implement Division, will be seen by over 120,000 persons in the East and Midwest this spring. It will feature a musical stage show, as well as four acres of equipment displays and outdoor demonstrations.

A geodesic dome, three stories high and 110 feet in diameter, will be assembled at each stop as an auditorium. Transportable by air, the dome has an aluminum-tube frame covered with a waterproof nylon "skin" and provides 10,000 square feet of floor space and room for 800 spectators.

Ten station wagons and four 15ton vans will move the show.

GINEERS

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OAST





# Panels have appearance of masonry we but are built at less than half its cost

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Tilt-up construction is not only for factories and warehouses. The method can also be applied to residential buildings without sacrificing warmth and livability.

The key to the construction is casting a flagstone face on the exterior of the tilt-up slab. It's a simple process—almost like placing concrete over a flagstone walk. The erected panel looks like a masonry wall, but it is built at less than half the cost.

At Zionsville, Ind., a contractor is making use of the method to build a beautiful, yet low-cost, home for the aged. Wolf Construction Co., Logansport, Ind., originator of the technique, was awarded the general contract under a low bid of about \$400,000. The architect is Henry C. Wolf of Logansport and of Champaign, Iil. Both the architectural firm and the construction company are parts of the same organization.

The building is the first unit in a \$4 million addition to the Indiana Baptist Home. The addition will include a residence hall, a hospital, and a church.

Representing the latest thinking in facilities for the aged, the home contains 75 single rooms and two 4-bed wards, 7 lounges, and a centrally located dining room. The  $10\times16$ -foot rooms, located on both sides of a central corridor, have private bathrooms.

### Variety of building materials

The H-shaped building, containing 47,000 square feet of floor space, makes use of a variety of structural materials. The exterior walls are made up of flagstone-faced concrete panels that alternate with window-wall construction. The corridor walls are built of plain tilt-up slabs. Resting on top of the wall slabs are laminated wood beams. These wedge-shaped beams extend across the 42-foot width of the wing and support the gabled roof.

The 179 tilt-up panels had to be cast with care. Shrinkage cracks in the concrete could not be tolerated, since the surface of the completed wall is painted.

### Panels formed on floor slab

Both flagstone and plain panels were cast directly on the 4-inch floor slab. The concrete panels were formed with wood or with steel road forms. They were held in place by blocks nailed to the concrete.

When the 8-inch-thick flagstone panels were to be cast, the floor within the forms was cov-



Speed of the corridor panels have electrical conduit wired to wire-mesh reinforcing. Quilet baxes are capped on wood blocks nailed to the concrete floor. Lift-A-Part book-breaking agent was applied to the floor slab about five hours before concrete was placed and again just before placement.



Interior and exterior panels are in place for a typical wing. Window walls will be located between the flagstone-faced panels. Notches in the corridor panels will receive laminated wood beams. The panels are braced in position until roof beams are set in place.

ered with about a 1-inch layer of and. Workmen pushed the flagstone into the sand until the stone was well sated. The individual stones were separated by 1 to 2-inch gaps, and they penetrated about 1 inch into the sand.

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When all stone for a panel was set, the sand was wetted down to give it sufficient compaction. A half-inch layer of mortar was then applied to the surface of the sand. The mortar served as a form for the concrete and also helped to hold the pattern of rocks in place.

After placing two layers of 6×6 6/6 wire mesh on top of the rock, cremen placed concrete for the slab. The mix was vibrated, screeded, and given a hand-trowel finish. Hydocide curing compound was applied to the surface of the slab to insure slow curing.

## Ready-mix concrete

The ready-mix concrete was a 6-ack mix that cured to 3,000 pounds at 14 days. An air-entraining agent was used in the mix to obtain better insulating qualities.

Construction of the 6-inch-thick corridor panels was similar. Lift-A-Part bond-breaking agent was applied to the floor about five hours before concrete was placed, and then again shortly before placement. The agent made for a clean breakaway, and did not interfere with subsequent painting of the panel.

Some of the corridor panels required electrical conduits; these were held in place by being wired to the wire mesh. The outlet boxes were capped on wood blocks that were halled to the concrete floor.

### Erection

Once the panels had been cast and cured, the building went up in a hurry. The individual panels were set in place by a Bay City 25-ton crane, that used a special strongback to make the lift.

The strongback held the slab by means of lifting eyes screwed into inserts in the concrete. An extra cable from the crane held the slab vertical after it had been picked up. Diagonal braces held the panels in position until the roof beams were (Continued on next page, col. 4)

10,000 GALLONS AT A CRACK!
...MEANS FEWER TRIPS TO WATER-UP.

Yuba-Southwest big gallonage sprinkler tanks cut costs, speed up the job: sizes up to 10,000 gallons

> Yuba-Southwest also manufactures MULTIPLE-BOX COMPACTION ROLLERS SELF-PROPELLED ROLLERS SHEEPSFOOT ROLLERS

Yuba-Southwest Semi-Trailer Sprinkler Tanks are designed and engineered to help contractors slash time and costs watering down big earthfills.

They are built in big-gallonage capacities only, ranging from 5,000 to 10,000 gallons, to reduce by as much as one-half the number of non-productive trips to the water source for tank filling. This minimizes a manpower cost problem ever present when conventional "piggyback" gasoline-type sprinkling tanks of small 2,000 to 3,000 gallon capacity are used.

Equipped with large, high-flotation, low-pressure tires, these big Southwest Sprinkler Tanks can work way out on deep, soft fill without losing traction or bogging down. With pressure spray bars both front and rear, and gravity bar under the tank, they provide faster area coverage with greatest possible water penetration.

Yuba-Southwest Sprinkler Tanks are adaptable for use with Caterpillar DW-21, DW-20 and DW-15 Tractors and other suitable prime movers. Various draft beam or hitch arrangements are available. Get complete information—today.



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YUBA CONSOLIDATED INDUSTRIES, INC.

or more facts, use Request Card at page 18 and circle No. 255

### **New North Carolina map**

Official state highway maps of North Carolina for 1960 are in the process of being distributed, without charge, by the highway department, Raleigh, N. C.

This newest map shows interstate highway routes in green, U.S. routes in red, and North Carolina state routes in black against a white background. Two new insert city maps have been added this year for High Point and Rocky Mount. Other insert maps include Winston-Salem, Greensboro, Charlotte, Asheville, Durham, Fayetteville, Raleigh, and Wilming-

The pictorial side of the map shows points of interest throughout the state



Old Glory flies atop a 37-foot steel a umn, some 400 feet above Manhastreets, following the topping out many held last month for the 31-story to milli n Western Electric office b City. The country's tall welded structure was fabricated erected by Dreier Structural Steel Co., Long Island City, N. Y.

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## Topping out ceremonies for all-welded skeleton of Manhattan skyscraper

Topping out ceremonies follow by just 51/2 months the start of work for the country's tallest welded steel-framed building-the Western Electric Co. office butter at 222 Broadway in New York In traditional ceremonies, a flame was welded to the topmost steel of umn, and the American flag attached while the 37-foot column was hour into position.

The building, the largest structure ever handled by Dreier, required some 20 tons of welding rods in the fabrication and erection of the 10,000 to of structural steel. The building will be ready for occupancy early neg year. Western Electric offices, ner located in more than 12 downton buildings, will be consolidated in the 753,000 square feet of office space previded in 27 of the building's 31 storie The remaining area will be used for building services.

(Continued from preceding page)

set in place. The bottoms of the con crete panels were secured to the flow by means of welding plates.

Some of the panels tested the ca pacity of the crane. The average size ran about 8×12 feet ×8 inches thick Interior panels averaged 10×12 fee with a 6-inch thickness.

After the concrete panels were erected, the laminated wood beam were set in place. The beams received a solid layer of double tongue-andgroove 4×6's that were nailed to each other and to the beams. On top of the wood decking was placed a 4-pb built-up roof with white sand topping to reduce summer heat absorbed by the roofing.

### Personnel

John N. Paul superintends the job for Wolf Construction Co. He works closely with the chief designer of the building, Wayne E. Spangler.



Wayne E. Spangler, chief designer of the building, and John Paul, superin-tendent, work closely together during

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 256



WIX Filter Cartridges are engineered specifically for every engine in construction service... gasoline or Diesel - mobile or stationary-for lube, fuel, and air. Replacement Cartridges are available for:

CATERPILLAR - DETROIT DIESEL INTERNATIONAL

LE TOURNEAU - MURPHY ALLIS CHALMERS and all other

struction Equip

# FREE

Filter Survey by WIX Factory-Trained Specialist, plus a Mainnce Manual.



of Prescription Filtration . . . the exclusive WIX Filtration that paves the way to reduced maintenance costs and increased profits. WIX Hevi-Duty Oil and Air Filter Cartridges remove contaminating abrasives, sludge, and dirt -keep the equipment on your spreads operating more efficiently, more economically. Even under the worst working conditions and toughest time schedules, you'll do better with WIX!

And, WIX offers you a FREE Filter Survey that lists the correct lube, fuel, and air filter cartridge replacement for each one of your engines. No heavy inventory for youyour local WIX wholesaler stocks a reserve supply-one convenient source for fast filter service. Ask your Jobber, or write us TODAY!



SPECIFIED FOR ORIGINAL EQUIPMENT AND REPLACEMENT BY MAJOR MANUFACTURERS

WIX CORPORATION · GASTONIA, N.C.

In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

Sodium-graphite power reactor requires

# Big, complex substructure

Construction of the world's first full-scale sodium-graphite power rester is a continual challenge to the contractor. Particular difficulties are presented by the massive concrete subtructure that houses the undermound nuclear furnace.

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Consider these problems: placing concrete for 8-foot-thick walls to meet the tight spex of "radiation-barrier" concrete; working in a 68-foot-deep hole through a rainy season; wrapping the entire foundation in a 5-ply waterproof membrane; meeting a scheduled completion date in spite of interplace in the plan changes and a shortage of stilled workmen.

These were the challenges met by Fruin-Colnon Contracting Co., St. Louis, while working under subcontract to Peter Kiewit Sons' Co. on the first stage of the substructure of the Sheldon Station atomic power plant near Hallam, Nebr.

The combination nuclear and conventional plant is being built jointly by the Consumer's Public Power District of Nebraska and the United States Atomic Energy Commission. Consumer's Public Power District is financing and building the conventional plant. The AEC is building and turnishing most of the funds for the 439 million nuclear facility. (Consumer's is contributing approximately 45¼ million toward the cost of construction of the nuclear facility and 420 million for the conventional plant.)

By April, 1961, the 100,000-kw turbine generator is expected to be put on the line, powered by a conventional coal and gas-fired boiler. About a year later, the nuclear portion of the plant will be ready to supply steam to the same generator. The nuclear reactor is rated at 75,000 kw

### Sodium replaces water

Essentially, here's what happens in a sodium-graphite reactor. Liquid sodium is heated directly by nuclear famion inside the reactor. This liquid, because it becomes radioactive, cannot so directly to the boiler. Instead, it passes through a shielded heat exchanger, where the heat is transferred to nonradioactive sodium. It is this secondary liquid sodium that beats the boilers to produce the deam that turns the turbine generator.

Molten sodium—a metal that looks he mercury—is used in the heat exchangers for two reasons. First, it foes not boil at power-plant temperatures. Second, it transfers heat very exciently. It does have one disadvantage: sodium reacts violently with (Continued on next page)

At the Sheldon Station power plant near Hallam, Nebr., a 5-ply waterproof membrane is being laid prior to forming for the 4-foot foundation slab. In the background, a BE 51-B is ready to bucket concrete to the forms. At left, a Bantam dragline and Traxcavator excavate for the reactor pit.







Fortunately we knew his plant well enough to know what parts and equipment were required. We loaded them and a skilled service man on a truck, drove all night and got his plant going next day.

Service has always come first with us. Every Simplicity plant owner is given the names of 10 Simplicity men with their home phones. Any one of them will get repair parts out in the middle of the night if necessary. We build nothing but asphalt plants and were raised on asphalt road building so we know what it is costing you if your plant is down . . . and so do you.

Compare Simplicity with any other. The Simplicity plant needs fewest repair parts but you can get them faster and at lowest cost.

## SIMPLICITY STANDARD UNITS

have improved the efficiency of other makes of asphalt plants. These improvements frequently pay for themselves on one job. Engineering recommendations on request with no sales annoyance. Write for catalog of auxiliary units.

# DEPENDABLE



For more facts, use Request Card at page 18 and circle No. 257

MAY, 1960

HOINERS



■ The Cat Traxcavator shaves hard clay from the reactor pit and deposits the material where a dragine can pick it up and load it to the waiting dump truck. The truck uses a ramp to get to the ground level. In the foreground is the work alab for the maintenance cell area, which is 68 feet below ground level. When the Traxcavator finished its job, it was pulled out of the hole by a crane.

A Bucyrus-Erie 51-B crane swings concrete from a Challenge mixer on an International truck to an 8-foot shielding wall. The B-E 22-B clams out a hole for one of the foundation slabs. Economy steel forms are being used for the walls.



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water. Normally, in the closed has exchanger system, the sodium will never be exposed to moisture. The foundation walls and floors are being completely waterproofed against the unlikely event of a leak in the system.

The substructure of the nucleur plant houses the reactor, the primary heat exchanger, the spent-fuel storage cell, the pump room, and numerous other facilities. The heart of the plant is a 19-foot-diameter × 33-foot-high stainless steel cylinder containing the reactor core. It is here that heat-producing fission occurs.

The cylinder is enclosed by 6-inchthick steel rings to confine the samma radiation. The rings are serounded by thermal insulation, which in turn is enclosed by cavity line plates furnished and installed by the Henry Pratt Co. of Chicago. The steel sides of the liner act as the inside forms for thick walls of concrete. The concrete is protected from the high temperatures of the reactor by cooling coils mounted on the concret side of the cavity liner. The highly specialized job of furnishing and erecting the reactor structure has been let as a subcontract to Baldwin-Lima-Hamilton Corp.

### Manage and I as

Digging the deep, multilevel hole for the foundations of the nuclear plant was a tricky job. The work was handled by Miller Excavating Co. of Omaha under a subcontract from Fruin-Colnon. About 50,000 cubit yards of dirt had to be excavated from a hole that measured 193×200 at its top. The excavation dropped to a depth of 68 feet on steep 1/4 to 1 slopes. No sheet piling was necessary in the hard clay.

The bulk of the dirt was moved by scrapers. Cat DW21's, entering and leaving by ramps, roughed out all except the last 20 feet of the hole. The deeper parts of the excavation were cut out by a Cat Traxcavator. The front-end loader moved the material to a point where it could be reached by a dragline. The dragline hoisted the dirt to a dump truck that climbed a ramp to ground level. When the excavation had been completed, the loader was hoisted out by a crans.

Before concrete could be placed for

# "My General 2-3 Ton Roller INCREASED Production by 34%, DECREASED Labor Costs!"

ELIMINATES HAND TAMPING: "My General 2-3 Ton Roller works flush against building lines and curbs.

This eliminates hand tamping completely! The General has increased production by 34% and decreased labor costs," says Richard (Dick) Palmer, owner of Palmer Asphalt Paving, Penns Grove, N. J. "I've also experienced a steady increase in business," continues Palmer, "because of the top quality work I can count on my General 2-3 Ton Roller to deliver."

SUPERIOR TO ROLLERS COSTING \$600 MORE: "I have owned 2-3 Ton Rollers costing \$600 more, but my General tops the best of them." Another feature of the General 2-3 Ton Roller that impresses Mr. Palmer is the Lifetime Guarantee on the compaction roll, standing behind it for life against damage and wear. As for maintenance and downtime problems: "I've had no maintenance costs or downtime in the two years I've owned the machine," he reports.

EASY TO OPERATE AND MAINTAIN: So easy to operate that anyone can master its controls within minutes. Push button electric starting, Link-Belt roller chain steering, automatic forward and reverse transmission, automative type hydraulic brakes. Working parts are enclosed but easily accessible for maintenance. The General 2-3 Ton Roller has a turning radius of only 12 feet. Oversize water tanks and roll scrapers with imported cocoa mats are standard equipment.ALL THIS FOR A PRICE FAR BELOW ALL COMPETITIVE ROLLERS!

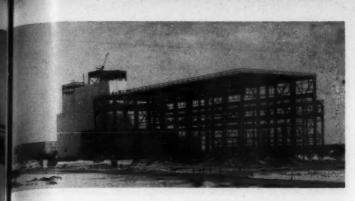
Also available in ½—1—3-5—4-6 Ton Models. Get the details today! Contact the Dealer nearest you or write, wire, or telephone direct; Dept. CE5-O.

Tilden 5-5400, Cable Address: Genereng Thorafare, N. J., Dealer Inquiries invited

# GENERAL ENGINES

CENTRAL ENGINES CO. INC. POUTE 150 THOROGENER NEW CENTRAL

For more facts, use Request Card at page 18 and circle No. 258



◄ The Sheldon Station plant is a combination nuclear and conventional plant, with most of the funds for the nuclear portion coming from the AEC. The conventional boiler will be used as a standby heat source during reactor test activities.

Economy steel panels are also being used to form the upper lift of the turbine-generator pedestal in the conventional plant that is being built for the power station.



the various levels of foundation slabs, a 1-ply waterproof membrane had to be put down. On top of a work slab were laid 5 plies of Fiberglas Permaply scaled with hot asphalt. The vaterproof membrane was protected with a %-inch layer of grout.

### Special construction joints

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GINEERS

The 8-foot-thick barrier walls rising from the foundation slab required special treatment. The straightline radiation of atomic particles will be blocked by vertical construction joints that are ribbed and by the dished horizontal joints. The ribbing of the vertical joints was accomplished by forming the bulkhead with corrugated metal sheets. All vertical-joint forms were painted with a retarding arent. After the forms were stripped, the surface of the concrete at the joint was jetted with water to expose the aggregate. Jetting was also done on horizontal joints. The outside surface of the perimeter walls received a 5-ply waterproofing membrane protected by a layer of fiberboard.

The high density concrete mix, weighing 143 pounds per cubic foot, was built around a mixture of 1-inch limestone, %-inch sand, cement, and water. Protex was added to the mix as an air-entraining agent. Pozzolith was added to maintain workability in the 3-inch-slump concrete.

Particular care had to be taken in curing the concrete to minimize shrinkage cracks. Hunt curing compound was sprayed on some surfaces, while other surfaces were covered with Sisalkraft. The walls were draped with wet buriap.

The walls, formed with Economy steel panels, were built up in 24-foot lifts. Suspended slabs, up to 8 feet thick, were supported by 6×6's on 3-foot centers.

Because the conventional part of the plant is being built by Consumer's Public Power District and the nuclear part by the AEC, supervision gets complicated.

For the nuclear plant, Atomics International, Canoga Park, Calif., has the research and development contract and over-all technical responsibility for the reactor. Bechtel Corp. is the architect-engineer. Peter Kiewit Sons' Co., Omaha, the general contractor handling the substructure and underground piping, has Charles Bell as project manager.

On the conventional plant, the engineering, architectural, and construction management work is being bandled by Stearns-Rogers Mfg. Co., Denver, Colo. The End NEW CAT
DW20-482 TEAM
HAULS BIG LOADS FAST, INCREASES PRODUCTION



Six-minute cycles on nearly a two-mile round trip hauling 24 bank cu. yd. of slow-loading sand! This is the production from two big Cat DW20G Tractors with new 482 Scrapers speeding road construction on State Highway No. 99 in Marshall County, Oklahoma. The big rigs are owned by the W. D. Jeffrey Construction Company of Fort Smith, Arkansas, contractors on this job.

"The new DW20 and 482 Scraper have a faster cycle and loading time which means higher production," comments Superintendent "Smoky" Branson. He adds, "Down time on equipment is minimum."

The DW20's 345 HP results in 12% increase in rimpull over the former model. This provides up to 20% faster travel speeds under similar haul road conditions. The 482 Scraper is teamed with the

DW20 for high production with its 24 cu. yd. struck load capacity (34 cu. yd. heaped). On this job the DW20-482 combination loaded in .93 minute.

Field reports from contractors all over the country confirm the productive efficiency of the big DW20-482 combination. Get the facts from your Caterpillar Dealer. He can prove—right on your job—that economical, high production is built into the new DW20 and 482.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

PICK THE DW20-492 TO BREAK PRODUCTION RECORDS

For more facts, use Request Card at page 18 and circle No. 259



Rock cuts on a 1,654,000-yard grading job near Beaver, Utah, are handled with scrapers following tractor-mounted rippers. This DW20 is helped to a heaping load by an Allis-Chalmers HD-21. Some of the cuts were brought all the way down by the rippers and 7-scraper spread. The rigs also handled the 35,000 yards of rock that had to be blasted.

After moving all dirt and rock that can be ripped . . .

# Scrapers load blasted rock



BUILT GENE

GENERAL TIRES

keep units rolling 'round-the-clock to build on-the-job profits!

When profits depend on constant operation, you can depend on the extra strength of the General Tire to bring you through on time every time. With Nygen cord construction to ward off bruise, cut and snag damage, the General Tire delivers unmatched traction and flotation, reduces down time to a minimum. Whether your next job is in sand, rock or mud, assure yourself top job profits with General Tires.

THE GENERAL TIRE & RUBBER CO. - Akren, O.

For more facts, use Request Card at page 18 and circle No. 260

Tractor-mounted rippers led by way for a spread of scrapers by moved every yard of excavation on 1,654,000-cubic-yard highway grade job near Beaver, Utah. Much of the material was rock, and some 15,000 cubic yards of the hard rock had be drilled and shot.

In addition to grading of the 1 miles of Interstate Highway 15, in project included subbase, cementreated base, bituminous surfacts and one complete interchange. To contract was awarded by the United State Road Commission to Web Cargo, Inc., Las Vegas and Rem. Nev., on its low bid of \$1.73 million.

Wells Cargo's spread of seven Car DW20 scrapers, push-loaded by a pair of new Allis-Chalmers HD-in tractors, formed the nucleus of the earthmoving team. Denvi

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One of the rigs at work was a Model 36A Caterpillar D8 tracked ozer equipped with an Ateco rippe and Double J breakers. This rig not only hacked its way through many difficult rock cuts but also found time to help the push-tractors on the low-ing cycle.

The scraper spread first stripped off the loose material from a cut, going on down until they were stopped by rock. In most of the cuts, this was not very far. Then the rippers was to work.

# Rippers lead way

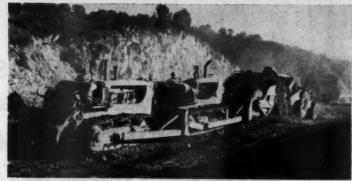
The new Cat 36A ripper and an older D8 with an Ateco ripper dug their way through rock cuts that looked as if they would have to be drilled and blasted. As long as there was loose material to get, the scrape



A big Peterbilt water truck with a 4,000-gallon tank applies water to the fills. The pump supplying water to the spray nozzles is powered from the truck engine through the power take-off of the transmission.



A new Model 36A Cat D8 with an Ateco ripper and Double J breakers handles most of the tough ripping assignment. It keeps working a cut until drilling and blasting have to be done, then it moves to another cut.



A DW20 scraper picks up a heaping load of the rough material. It is push-loaded by an Allis-Chalmers HD-21 tractor and the 36A Cat D8 ripping tractor, which here is taking a turn

gread stayed and worked with the rippers. If the rippers fell behind, the graper spread simply moved to another cut and began taking the loose material.

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Some of the rock cuts were taken all the way down to grade by the rippers and scrapers. In other cuts, there was a core of really hard rock that had to be drilled and blasted. In this case, the ripping tractor simply took what rock it could get and then moved on to another cut, leaving the drilling and blasting to another crew.

### Hard rock is drilled and shot

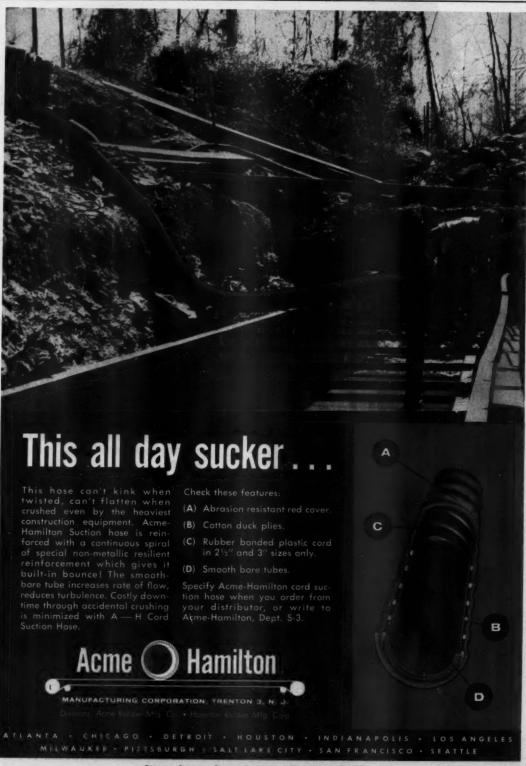
The drilling crew used Gardner-Denver Air Trac drills to punch out 34-inch holes on an 8-foot gridiron pattern for the blasting. The holes were loaded with a ready-mixed aluum-nitrate explosive and TNT. This gave a very good breakage of the rock, and practically no secondary drilling was required.

When the rock had been shot, the ripper and the scraper spread moved back into the cut and removed the loose material. The Double J breakers on the ripper seemed to loosen the rock so that the scrapers could get every bit of it. The push-tractors frequently doubled up on the loading operation. Both of the HD-21 pushtractors were equipped with front push plates and rear push blocks. When one of them was busy or not available, one of the D8's on the job moved into the rear pushing position.

On the fills, compaction was attained by continuous rolling with four (Continued on page 19)

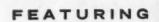


we skid-mounted lighting units have been pulled into place by the No. 12 motor grader. The one at right has a flobart generator; the one at left is powered by a Schramm generator.



for BIG SAVINGS ON YOUR JOB... the powerful, maneuverable MASSEY-FERGUSON 406 says:









The amazing Massey-Ferguson Backhoe is unexcelled for precision digging—can dig flush alongside walls and buildings! Yet it is powerful when attacking frozen ground or blacktop. Its 14,000 lbs. of breakout power enables it to dig right through!

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Maximum Versatility! Numerous power-matched attach-

Maximum Versatility! Numerous power-matched attachments, including the famous Backhoe shown below, to give you many machines in one. And the 406 is marvelously versatile in another important way — it handles big jobs with speed and ease yet has the "feather touch" and economical performance to handle smaller jobs at a profit.

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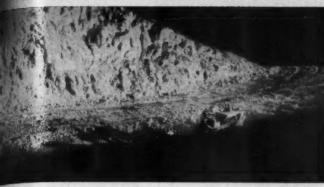
# Contractors and Engineers

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Compaction of fills is handled by Le-Tourneau and Tampo sheepsfoot rollers pulled by a D8. There were four sets of the 5×5-foot rollers, towed in tandem, at work on the fills.



a of 5×5-foot LeTourneau and mpo sheepsfoot rollers towed in dem by D8 tractors. Water for the was supplied by three Peterbilt er trucks carrying 4,000-gallon nks. Pumps on the trucks were iven by the truck engines through the power takeoff. A pair of Cat 12 for graders completed the finishing spread.

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The job lies in an arid region where the water supply was one of the contractor's big problems. Wells Cargo leased a well from a nearby rancher. installed a vertical turbine pump, and hid 12,000 feet of 6-inch steel pipe mning from the well to a 100,000alion ground storage tank beside the ghway. This tank was 500 feet above the ground level at the well. It was much cheaper to pump the water up this hill than to haul it by truck. A Rex 6-inch pump drafted from the gound tank to fill the water trucks.

### Base and surfacing

Argregates for the base, cementated base, and hot-mix surfacing ere produced by the contractor on the job. A Cedarapids jaw crusher ade the primary break after the w gravel was scalped through a Pier 4×12-foot double-deck screen. fter the primary crushing, the marial was sized through a Pioneer 1x10-foot triple-deck screening unit. ersize circulated through a Sy-M-Nordberg cone crusher.

To improve the accuracy of the mde on the base course, the conctor brought in an Eversman land mer-a long-wheelbase scraper at was pulled by a tractor. This ne was used on both the base ad the cement-treated base courses th very satisfactory results.

The cement-treated base material ms mixed in a Pioneer plant, laid oth a Jersey spreader, and comcted with pneumatic and steelrollers. A single 6-inch course laid in one lift. The base and ing will be completed this year. e Hamdorf supervised the work Wells Cargo, Inc., with Jack Chaand Nate Barlow serving as day night excavation superintendents, tively. Dick Peterson was meic foreman, and Jim Patton ed the office.

e resident engineer on the job e Utah State Road Commission ert Swain. The project was unthe supervision of the Cedar City rict with Earl A. Johnson serving strict engineer. Utah's director shways is C. Taylor Burton.

THE END

# month BARGAINS

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The biggest values you've ever seen in used equipment -nearly all makes, all sizes, all conditions-honestly described and rock-bottom priced. May is bargain month at your Caterpillar Dealer. He's taken in a lot of trades. He's offering the biggest bargains in his history. He'll deal-with financing tailored to your needs!

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# First come-first served!

Whether you're adding to your line-up or just going into business, here's an opportunity you can't afford to miss. First come, first served-so don't delay. Visit your Caterpillar Dealer's lot today!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

BEST USED EQUIPMENT BUYS ANYWHERE

For more facts, use Request Card at page 18 and circle No. 263

# **Tricks of the Trade**

# Prestressed dirt stabilizes slope for overpass columns

Now they're prestressing dirt. This unique method is responsible for stabilizing a slope where solid footings were needed for the heavy columns of an overpass in California. On this particular job, moving the overpass to a spot where solid footings were possible was out of the question because of right-of-way restrictions in that area.

Here's where the Stressrods system made by Rods, Inc., Berkeley, Calif., came into the picture. This high-tensile alloy steel rod and anchorage system for prestressed concrete uses a nut and a coupler that provide positive anchorage without a need for threading the rods. The rods do not even have to be cut to a specified length before being installed.



Three rows of 14 holes each were dug to a depth of 73 feet in the slope. Stressrods were inserted in sheetmetal tubes, and anchor plates were fastened to the ends and held in place with Howlett Grip Nuts. These have an outer casing and inner sleeve that screw together with large, modified buttress threads. The sleeve is slotted to give flexibility and allow its diameter to be reduced. When tension is applied, small teeth on the inside of the sleeve grip the rod, the sleeve is moved forward, and its diameter is decreased by the taper of the buttress threads. This forces the small teeth to become firmly embedded in the surface of the Stressrod.

When the covered rods were inserted into the holes, the holes were filled with concrete to a depth of 40 feet. The remaining 33 feet was filled with gravel, and the entire pattern of holes was covered with concrete, leaving the ends of the Stressrods ex-



posed. An anchor plate was placed over the protruding ends of the Stressrods, and other Howlett Grip Nuts were attached. Then a hydraulic jack was secured to the rods and tension was applied.

The jacks stretched the steel rods inside the tubing, and the nuts were tightened. This put a stress on the entire slope area, holding the loose dirt under compression and providing a firm foundation for the bridge columns.

# Old bus used as field shop contains workbenches, bins and drawers for parts storage and tools

An old bus, no longer serviceable for public transportation, was transformed by a contractor into a highly efficient field service headquarters. The mobile unit is now the nucleus for a field shop setup and provides storage space for many of the small parts and supplies most commonly needed.

After removing the bus seats, the contractor, Jamieson Construction Co., Ltd., Vancouver, B. C., installed two workbenches near the front and



# WHICH IS BEST 3 new series Cat Motor Graderit

No. 12 Series E 115 HP TURBOCHARGED
No. 112
Series F
100 HP

No. 112 Series E 85 HP

# for higher production, easier servicing and long life

No machine is better than its engine—and the new Cat Diesel Engines in these three new series Motor Graders are better than ever. They're more compact, more rugged and modern in design. They incorporate the latest developments in metallurgy and technology. They provide three important bonuses—greater lugging ability in tough going, easier servicing and long life.

# A COMPLETE LINE-85 HP to 150 HP

The new Turbocharged 100 HP No. 112F is designed for high production to match work requirements between the new 85 HP No. 112E and new 115 HP No. 12E. Compared with the 85 HP model, the 100 HP machine delivers 5% higher travel speeds and a 5% increase in blade speed control. With its introduction into the line, Caterpillar now offers you a choice of four Motor Graders in all to meet your specific requirements. The largest is the Turbocharged 150 HP No. 14, the most versatile big grader ever developed.

## SEE YOUR CATERPILLAR DEALER

Some of the features of the new Cat Motor Graduare described briefly here. But for the complicture, see your Caterpillar Dealer. Ask his show you how they're a better buy for your motor than ever. Take a look under the hoods at the modern-design engines. Better still, ask for demonstration.

See how they "pull through" tough going. Caterpillar Tractor Co., General Offices, Peoria

CATERPILLA
Caterplier and Cat are Regulated Traditional To a



and the rear with shelves and bins a parts storage. A grinder and drill the were mounted on the benches. The small tools are kept in the meets under the benches. Finally exterior was repainted in Jamiestriph orange, and the company was lettered on in blue. The is a unit which is as good looking it is serviceable. The field tenance crew also uses a large for the heavy or bulky parts and

egrading jobs do not usually ing, the field maintenance crew be prepared to pack up and considerable distances on short



notice. Here the bus serves especially well. In the time it takes to install a fresh battery, the bus is ready to move on under its own power.

# Forms for columns, tied with steel straps, are light, strong, rigid

Adapting a method commonly used in the packaging of heavy materials, Hoffman Construction Co. tied column forms with Signode Steel strapping on the Portland, Ore., Memorial Coliseum job. Using a pair of sawhorses for a bench and special tools provided for tightening, crimping, and cutting the bands, two workmen quickly assembled and tied the forms.

The forms for the 2-foot-square columns were faced with 34-inch Permaply plywood and backed with longitudinal 2×4's. Each side of the form had a 2×4 flatwise along each edge and a 2×4 on edge in the middle. This provided a path for the strapping that approximated a circle instead of a square, thus reducing the bending of straps around corners.

The straps were cut to length, looped around the form, and inserted into the locking clamps. The ends of the straps were alternated on opposite sides of the form to equalize the tensioning stress. Straps were spaced closest together near the bottom of the 15-foot columns where the stress would be the greatest, and farther apart near the top.

With the straps in place, the two workmen used the tensioning tools to tighten them to the required tension, which was judged by the sound produced when the strap was tapped. The locking clamps were then crimped onto the straps with a double crimp for positive locking.

The resulting form was light in weight, yet strong and rigid. It was easily handled by the crane.

The picture sequence shows, first, the workman tightening the strap to the desired tension with the tensioning tool. He "sounds" the strap and judges the tension by the tone produced. Then, with the tensioning tool still in place, he makes the initial crimp that attaches the locking clamp to the strap. Finally, he removes the tensioning tool and makes a second crimp in the locking clamp to assure a positive, tight connection.





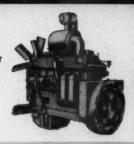


-For more facts on Cat graders, circle No. 364

# SFOR YOUR JOB? Identith new compact engines!



New No. 12E Motor Grader features new compact 115 HP Engine





New No. 112E Motor Grader features new compact 85 HP Engine

The new No. 112F is similar in appearance, but features a Turbocharged 100 HP Engine.



will TORQUE. Though the engines were Cat Motor Graders are demissed specifically for each machine, they deeled higher torque than previous this and have other basic improvetion common. For example: shorter, to blocks and crankshafts...stronger, button-resistant cylinder heads...immid cooling systems with greater caland advanced design fuel systems.

ALER

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Ask him your mones at the n

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h going. , Peoria -new, compect fuel injection pumps with barrel and plunger assemblies in easyto-service pump housings.

to-service pump housings.

NEW STARTING ENGINE. Now standard is a new two-cylinder, vertical starting engine to replace the horizontal engine. All three Motor Graders use a modern 12-volt electric system. An optional 24-volt system is available for use in moderate climates where direct electric starting is practical.

PERFORMANCE-PROVED FEATURES. While many advances have been designed into the compact new engines, certain time-tested features have been retained. To mention a few: precombustion chamber design that delivers maximum horse-power on heavy, economy-type fuels... steel-back aluminum bearings... wettype "HI-Electro" hardened cylinder liners... and aluminum pistons with cast-in ring band.

# OTHER HIGH-PRODUCTION FEATURES IN CAT MOTOR GRADERS



BAY-TYPE AIR CLEANER dard removes a minimum 5% of all dirt from Intake site every service hour. Can exicud in 5 minutes. Cuts maintenance time by as a 7% and substantially remaintenance costs. Cleaner to extends engine life.



EXCLUSIVE OIL CLUTCH (standard) provides up to 2000 hours service without adjustment, the equivalent of about 12 months of "adjustment-free" operation. A Caterpillar development proved by millions of hours of use, it virtually aliminates down time for clutch repeir.



AUTOMATIC BLADE CONTRO (optional) cuts grading time i haif. Operator sets desired slop on dial and only has to contro depth of cut. Manufactured b Preco Incorporated, the unit automatically maintains blade slop within 1/4" in 1/2". Available tacture learning.



IN-SEAT STARTING (standard) offers operator finger-tip convenience and poelitive starts in drip weather. Another feature: improved mechanical blade controls provide precise adjustment and ease of engagement. "Anticrese" lock makes blade stay put under load:



The newly elected head of the association, John A. Volpe, right, and M. Clare Miller, the new vice president.

Bid-peddling issue sparks

AGC convention sessions as

# Contractors discuss labor and legislation

Labor and legislation appeared to be two of the dominant topics in the minds of the 2,300 delegates to the 41st annual convention of the Associated General Contractors of America. The sessions were held in the beautiful new California Memorial Masonic Temple in San Francisco, March 21 through 24. Belief in the ever-increasing expansion of the construction industry during the coming year and decade provided a positive undercurrent for the sessions.

A suggested plan to control bid peddling sparked some of the liveliest discussions at the meetings. The plan, first proposed by a committee, was tabled by the AGC Governing and Advisory Board. It came back for discussion at the meeting of the Building Division and was adopted by a close vote after a lengthy and spirited discussion. A modified version was adopted as a resolution by the convention at its final business

Among the highlights of the meeting was a panel discussion on the highway program featuring Rep. Gordon H. Scherer (R., Ohio), Federal Highway Administrator Bertram D. Tallamy, AASHO executive secretary A. E. Johnson, and California state senator Randolph Collier. The panel, moderated by AGC's incoming president John A. Volpe, performed under lights and before cameras, as the entire sequence was filmed.

From the political standpoint, the highlight of the convention was a debate on "The Issues in 1960" by Sen. Barry M. Goldwater (R., Ariz.) and Paul M. Butler, chairman of the Democratic National Committee.

## Charter Hawaii Chapter

At the opening general session, the delegates were welcomed by Paul A. Elsner, president of the Northern and Central California Chapter of AGC. He reminded the delegates that they were being welcomed as guests, not as potential competitors.

After the annual report of executive director James D. Marshall and other convention preliminaries, president James W. Cawdrey presented the charter to the newly affiliated Hawaii Chapter.

### The federal budget

Appearing as the first of a long series of featured speakers on the agenda of the 4-day meeting, Maurice H. Stans, director of the Bureau of the Budget, Washington, D. C., ex-



# CONTINUOUS MIX 20 YEAR CUSTOMER

San Ore Construction Co., has completed 14 jobs with both types of Barber-Greene plants since mid-1956 purchase

Lloyd Miller, partner in San Ore Const. Co., McPherson, Kansas, reports: "During the past 20 years, we have owned six Barber-Greene plants and eight Barber-Greene finishers.

"We like both our Barber-Greene Continuous and BatchOmatic plants, especially the low maintenance. And our BatchOmatic has operated 100% automatic since the day we got it. Both plants have produced nearly 1,000,000 tons on 14 jobs in widely scattered locations."

Before buying your new asphalt plant, check with the leading authority in your area—your nearby Barber-Greene distributor. He can offer you by far the greatest choice of size and type of: continuous mixers, batch towers, dryers, dust collectors, wet collectors, gradation units, cold feed units, and complete materials handling systems including conveyors, elevators and feeders.

CONTINUOUS PLANT ADVANTAGES—You'll get these benefits with any of four Barber-Greene Con-

tinuous plants: • greatest production per dollard investment; • up to 10% initial savings; • up tained high production at lowest per ton cost; • up to 10% lower operating costs; • up to 10% lower maintenance per ton; • higher resale value; • up to 10% lower maintenance per ton; • higher resale value; • skilled operators required; • pre-set automatic proportioning accuracy; • fastest setup time; • but only needed components; and • move only needed components for your next job.

BATCHOMATIC BENEFITS—And with an BatchOmatic plant you get these new features as improvements; • push-button control from an matic to manual operation for quick mix chamber of the most rugged and reliable automatic control of the cuts maintenance in half; • exclusive Dyn Mix pugmill gives fastest mixing time; • fact discharge; • up to 10% more tonnage with a vanced cycling principle; • over 25% greater so screening capacity; • plant completely pre-wing completely hydraulic operation; and • tow comes in complete self-contained sections.



Ernest DiSabatino accepts the H. B. Alexander Award on behalf of E. DiSabatino & Sons, Inc., Wilmington, Del. At left is 1. H. Hardin, head of the AGC accident-prevention

Outgoing president J. W. Cawdrey joins P. M. Butler, left, chairman of the Democratic National Committee, and Sen. B. M. Goldwater (R., Ariz.), right, for a brief exchange following their debate on "The Issues in 1960" at the final session.



plained the highlights of the 1961

'From a pessimistic viewpoint," he said, "I see a mortgage of \$750 billion . . . built-in increases . . . pressures to spend more . . . and to take over local government's problems. If we yield to these temptations," he predicted, "we can have higher taxes, more deficits, debasement of our money, and weak-

From the optimistic point of view, he noted the possibility, of disarmament, which might make it unnecessary to spend 54 cents of every tax dollar on national security.

In another address at the opening session of the conference, George Murphy, vice president of Desilu Productions, Inc., Los Angeles, appealed to the delegates to take active parts in the various levels of government. He congratulated incoming president John Volpe on his announced candidacy for the office of governor of his home state of Massachusetts. Bid peddling aired It was at the meeting of the Building Contractors' Division that bid shopping and bid peddling came under discussion. A recommendation by the national joint cooperative com-

mittee of the AGC and the Council of Mechanical Specialty Contracting Industries had been under consideration by the Governing and Advisory

Board, but the matter had been

William P. Scott, Jr., of Oakland,

Calif., president of the Mechanical Contractors Association of America. Inc., first brought the matter to the floor as he addressed the delegates. He reviewed the cooperative efforts

of the joint committee since its organization in 1958, including the

adoption of a recommended code for ethical conduct for the entire con-

"Now," he said, "we have a Recom-

mended Procedure for Receiving and

Handling Sub Bids for the Building

But when the matter reached the

floor after the report of committee chairman S. F. Nielsen of San Diego, the delegates were sharply divided on

acceptance of this recommended pro-

struction industry.

Construction Industry."

cedure.

tabled.

federal budget.

ening of our economy."





usly owned four Barber-Greene asphalt plants in 16 years, San Ore Const. Co., in 1956, pur-18 Continuous and 896 BatchOmatic plants which are now nearing their 1,000,000th ton of mix.

# OR BATCHOMATIC? S FROM BOT



STABILIZATION PLANTS FOR EVERY NEED. The new Stabilization Plant, left, hydraulically erects itself in two minutes after being towed to the job on its own pneumatic tires. This is but one of four models in Barber-Greene's No. 1 stabilization plant line that offer a production range from 200 to more than 600 tons of lowest cost mix hourly. All models meet any state's specs and are backed by years of experience in continuous material handling and control—your assurance of highest tonnage, lowest maintenance. Self-erecting Model 828, left, also available in portable and stationary models. Smaller Model 824 produces from 80 to over 200 tons hourly.



World's No. 1 manufacturer of asphalt paving equipment.

Representatives in Principal Cities of the Warts Barber-Greene

The plan proposed by the committee called for the general contractor to list the names of the mechanical specialty subcontractors on his bid. It further proposed that the architects, through AIA, be requested to provide space and require this infor-

mation on the bid forms.

(Continued on next page)

CONVEYORS . LOADERS . DITCHERS . ASPHALT PAVING EQUIPMENT For more facts, use Request Card at page 18 and circle No. 265

MAY, 1960

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William P. Scott, Jr., president, Mechanical Contractors Association of America. ... avoid separate contracts . . . make advantages of a single contract system outpeigh the disadvantages."

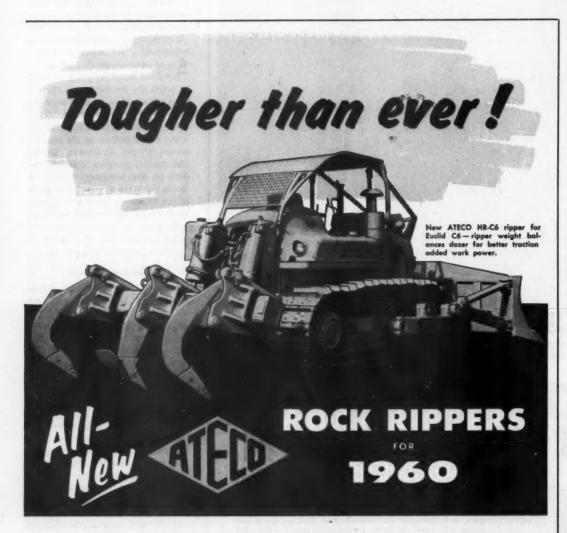


"We . . . still are faced with inroads made by industrial unions on private and public work."



M. Clare Miller, president, San Ore Con-struction Co., and AGC veep.

". . . some people joined together to promote a better understanding of the importance of highways."



Built by the pioneer in the mounted ripper field, all-new ATECO Rock Rippers for 1960 are the masterpieces of 40 years' experience.

ATECO rippers on thousands of jobs throughout the U.S. and 43 foreign countries have proved ATECO's superior performance—licking tough jobs other rippers can't touch, staying on the job to keep scraper fleets rolling.

Today's ATECO ripper offers more than everbigger cylinders and rods, greater use of highstrength heat treated alloy steels, "beefed up" design at every point to give extra strength and dependability.

Only ATECO rippers offer the advantages of really big equipment-better performance from the start, superior performance with less downtime through the years. Why settle for less? There are 36 ATECO models available to match all popular big crawlers. Write or wire now for complete information-please address Dept. 20.

(Continued from preceding page)

In the ensuing discussion, many the delegates came to the rostrum expound their opinions both for a against the plan. The committee n port was finally adopted by a name margin on a standing vote. However in the general session a few de later, the convention adopted a w lution deleting the recom of the plan to AIA and limiting is use to those AGC chapters where the local mechanical specialty suben tractors are in substantial agre

### Panel discusses highway

The feature of the Highway Dis sion meeting was the panel di sion of the highway program. With cameras shooting every minute the action, the stage looked like a mi for a movie or television program The film will be edited and produce for use in AGC chapters or other groups interested in highway prob

Among the subjects discussed by the panel were the financing of Interstate System, the contract trols that limit the reimburs of federal funds to the states, the current investigations of highway program.

At this same session, a repo submitted on the Better Hig Information Foundation by it vice president M. Clare Mille foundation, sponsored jointly ARBA, CIMA, AED, and AGC, ganized to promote the highway gram through the disseminat information to the public. Mille troduced Nello Teer, preside ARBA, who explained the aims of foundation, its progress to date, its current needs.

Reporting for the AGC labor mittee, chairman Frank J. Root Miami, Fla., described the p made during the past year formation of the Construction I try Joint Conference. "The c ence," he explained, "provides tinuing forum in which labor, agement, and industry problem can be regularly discussed."

The discussion of labor pr was carried over to a special labo forum session that was open only

American

TRACTOR EQUIPMENT

OAKLAND 3, CALIFORNIA 9131 SAN LEANDRO BOULEVARD .
For more facts, use Request Card at page 18 and

not members and chapter managers.

BROWN announced that the press
d business was forcing him to give
ithe chairmanship of the imporint labor committee, a position he
held for three years.

One day of the convention was deeast to the affairs of the Heavy, principal, and Utility Contractors' Division. Speakers at this session were mar Adm. E. J. Peltier, Chief of the Navy's Bureau of Yards and Docks; Mil. Gen. W. K. Wilson, Jr., Deputy Chief of Engineers for Construction, U. S. Army; Commissioner F. E. Deminy of the Bureau of Reclamaties; and Dean Barron, Assistant Djretor of the Audits Division of the Internal Revenue Service.

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A special Municipal Contractors' forum featured talks by Jean L. Vincens, president of the American Public Works Association, San Diego, Calif., and George E. McCallum, Chief of the Division of Water Supply and Pollution Control of the U. S. Public Bealth Service, Washington, D. C. At this session, members also discussed dy labor by local government agencies and the financing of municipal public works.

#### **Politics**

Those attending the final business venion of the convention were treated to a preview of some of the political fireworks in store for 1960 when Butler and Sen. Goldwater presented their respective views on "The Issues in 1960." These representatives of the Democratic and Republican parties, respectively, first exchanged personal ments, then plunged into a debate that brought out the wide divergence of their political opinions. Among the subjects discussed were foreign policy, schools, civil rights, agricultural support, defense, and interest rates

Among the resolutions adopted at the concluding convention session were several concerning labor and legislation. One expresses the association's opposition to legislation tending to legalize secondary boycott. Another urges better exchange of information on local labor policies. Others request liberalization of depreciation allowances, oppose escalator clauses, discourage local bidding advantages, and urge a more adequate apprenticeship and training program. Another resolution on the latter subject requests the Postmaster General to print a United States postage stamp in recognition of ap-

A final resolution urges all segments of the construction industry to support the Better Highways Information Foundation in its public information program.

### Officers installed

Officers of the three major divisions of AGC were elected and installed at the meeting. The Building Division elected Carl W. Olson of Lincoln, Nebr., as chairman and F. W. Mast of Waterloo, Iowa, as vice chairman. In the Highway Division, H. L. Royden of Phoenix, Ariz., and R. W. McKinney of Nacogdoches, Texas, were selected for the offices of chairman and vice chairman, respectively. The Heavy, Municipal, and Utilities Contractors' Division elected Floyd S. Oldt of Dallas, Texas, as chairman and Carl M. Halvorson of Portland, Ore., as vice chairman.

Officers of the association previously elected by mail ballot were installed. They are president John A. Volpe, who heads the John A. Volpe Construction Co., Malden, Mass., and vice president M. Clare Miller, president of the San Ore Construction Co., Inc., McPherson, Kans.



A panel discussion on the highway program is filmed in its entirety by three movie cameras as it is held before the Highway Division meeting. After being edited, the film will be made available to AGC chapters and other groups and arganizations interested in highway problems.



The panel, as it appears in the film, includes (left to right) Rep. G. H. Scherer of Ohlo, ranking minority member of the Subcommittee on Roads; California state senator Randolph Collier; panel moderator and AGC president J. A. Volpe; Federal Highway Administrator B. D. Tallamy; AASHO executive secretary A. E. Johnson.

# BETTER ROADS with Symons Forms



Bridge . . . Symons standard prefab panels were ganged for arched girders on bridge job. Contractor used 28 ganged sections.



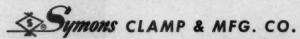
Culvert . . . Walls and slabs varied in thickness from 10 to 18". Outside height was 10\%' and inside dimensions were 8\%' wide by 7\%' high.



R. B. Potashnick & J. S. Alberici Const. Co., St. Levis, Mo

Retaining Wall . . . Double battered. 12" at top and 3' at base. Heights varied from 4' to 34'. Forms also used to pour footings, abutments, piers and beams.

Symons can help you with your road building problems. Our engineers will prepare complete form layouts and bill of materials. Symons Forms may be rented with purchase option—rentals to apply on purchase price. Information on Symons Steel-Ply Forms sent free on request.



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Warehouses throughout the U.S.A.

# MORE SAVINGS FROM SYMONS

For more facts, use Request Card at page 18 and circle No. 268



Work on the spillway of the rolled-fill Iron Bridge Dam near Dallas proceeds at a rate of about 58 cubic yards of concrete being placed per hour. The high production was achieved with a change-over from manual to semiautomatic batching and push-button weighing, which hiked plant output 18 yards per hour. Monoliths are formed with Blaw-Knox steel units.

Contractor working on dam spillway increases output by switch from . . .

# Manual to automatic controls

by BILL ALLEN, field editor

The difference between manual and semiautomatic controls could be measured in yards by the contractor operating the central-mix plant that supplies spillway concrete for Iron Bridge Dam near Dallas, Texas, The actual difference came to 18 yards per hour.

Hourly production went from 40 to 58 yards when Whittle Contracting Co., Dallas, converted to sem matic batching and push-b weighing.

Iron Bridge Dam is being bu part of the water-supply system in the booming city of Dallas, Lo on the Sabine River about 50 east of the city, the reservoir have a capacity of 930,000 acre-fe

(Continued on page 28



Semiautomatic controls speed the batching operation at the Johnson plant. The 2.2-yard batches are fed to a Koehring tilling mixer feeding a wet-batch hopper that, in turn, supplies concrete to Dillon buckets on the International truck. The driver releases the wet batch by means of a push button at ground level. The 600-barrel silo stores cement for the 80-barrel hopper.

(Additional photo on front cover)





The plant operator releases the button when the correct amount of aggregate shows on the Detecto scales; an air-controlled gate shuts off the supply. Cement is batched automatically. The phone ties plant to spillway; intercom runs to field office and the truck driver below.



At the Johnson plant, aggregates are brought to At the Johnson plant, aggregates are brought to overhead bins by conveyor belt. An American 595 crane feeds the receiving hopper of the conveyor. A workman at the base of the conveyor operates a Dillon panel that controls the belt and the Dillon turntable that guides each aggregate size to its proper bin. When a bin is low one particular aggregate, a warning light goes on underneath to alert the control-panel operator.



A water batcher weighs out the exact amount of water for each 2.2-yard batch. The contractor devised the air-operated system, which automatically turns the flow on and off.



MARYLAND — Building of streets in Hillcrest Heights development in southeast Washington, D. C. was handled by Montgomery Construction Company, Inc. of Laurel, Maryland. Their Huber-Warco 6D-2 grader was used to sub-grade, spread base gravel and finish grade. The company owns five other Huber-Warco machines.



# motor graders

with Torque Converter and Power Shift Transmission

SMOOTH, FULL POWER NO MATTER WHAT THE LOAD—Huber-Warco motor graders offer a power train matched to any load condition. It puts more power to work—smoothly, efficiently and economically.

TORQUE CONVERTER— Automatic features eliminate engine lugging and heavy load shocks. Engine torque is multiplied three times to give fast, effortless starts even with heavy loads.

POWER SHIFT TRANSMISSION—Power shifting makes the grader far easier to operate because of fewer controls. Shifting up or down under load at full throttle is done by moving one lever. Tailshaft governor maintains speed set on hand throttle.

HYDRAULIC CONTROLS—Complete blade control without leaving the cab—including all bank sloping positions. Easiest graders to operate means less operator fatigue and more production.

A trusted product name backed by respected distributor names from coast to coast



MOTOR GRADERS

Standard transmission models from 83 to 160 H.P. Torque converter and power shift transmission models from 102 to 195 H.P.



TANDEM ROLLERS

3-5 Ton • 4-6 Ton Retractable • 5-8 Ton • 8-10 Ton • 8-12 Ton • 10-14 Ton



3-WHEEL ROLLERS

10-Ton • 12-Ton • 14-Ton Standard Weight 10-12 Ton • 12-14 Ton Variable Weight



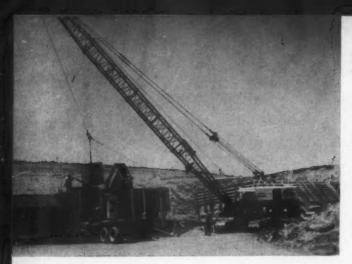
MAINTAINER

M-52 — 45½ H.P.
Attachments are Lift-Loader,
Broom, Bulldozer,
Patch Roller, Scarifier,
Snow Plow, Berm Leveler

**HUBER-WARCO COMPANY** 

Marion, Ohio, U.S.A.

For more facts, use Request Card at page 18 and circle No. 261



A concrete dump is completed by a Marion 93M crane with Dillon 2.2-yard bucket. Concrete buckets are delivered to the area by an International flat-bed truck.

man, Dewitt & Singleton of Wills Point, Texas. Whittle took the spillway portion of the job, while Moorman, Dewitt & Singleton put scrapers to work on the embankment. Forrest & Cotton, Inc., Dallas, designed the dam and are also supervising construction.

In order to start and complete the

spillway during the 1959 construction season, Whittle decided to increase the capacity of its Johnson central mix plant. It was a good plant, in manual operation made for a subatching cycle. The best it could not duce was about 40 yards an haw Whittle figured that by converting a automatic controls, it could get fast and more accurate batching. The contractor was right; plant capacity was increased to 58 yards an hour.

### Electric, air controls

Electric controls and air-operated cylinders made the batching crecompletely automatic. The wife

### (Continued from page 26)

The \$15.5 million project is being built by the Sabine River Authority under a contract agreement with Dallas. The city will pay all costs of constructing the dam, as well as the cost of land for developing the reservoir site.

### Completion this year

The concrete spillway is now completed, and dam closure is slated for summer. The rolled-fill dam and concrete spillway will have a total length of 29,900 feet and a maximum height of 85 feet. The concrete gravity-type spillway is an integral part of the dam. Containing 55,700 cubic yards of concrete, the spillway has an overall length of 740 feet and a maximum height of 81 feet.

Flood waters will pass over the top of the 480-foot overflow section, while heavy flows will pass through the structure in two gate-controlled sluiceways. Normal stream flows will be taken care of by two 20-inch castiron pipes.

The \$4.3 million contract for the spillway and earth embankment was awarded to a joint venture of Whittle Contracting Co. of Dallas and Moor-



One of the biggest vibrators in the business is displayed by one of the workmen. The air-powered Malan vibrator measures 6 inches in diameter at the head. The unit is used by one man to consolidate the stiff (1 to 1½-inch slump) concrete in the monoliths.

# "Live track' power steerings rock...SO WE KEEP OUR TD-29

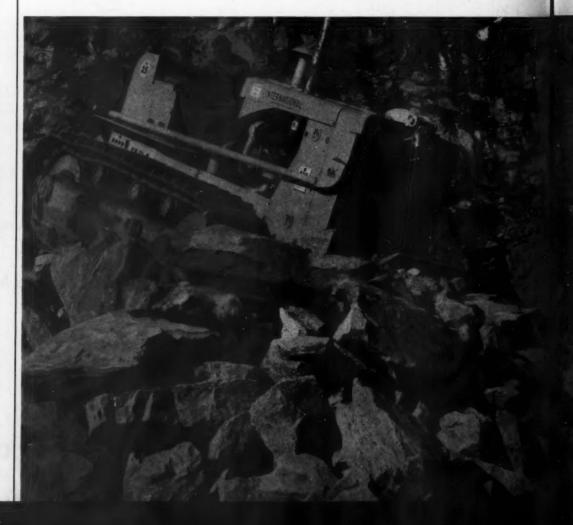
-Asheville Contracting Compa

Shale and blue granite rock make up 85% of the 550,000-cu. yd. of roadway excavation on this contract -5.18 miles of Blue Ridge Parkway construction, for the United States Department of Interior.

That's why Asheville Contracting Company places maximum reliance on their "rock-movers' special": kingsized International crawler power! Where the going's too tough or job progress is too slow and costly with big clutch-steered crawlers, "Asheville's" new 230-hp TD-25 and two veteran TD-24's take over—and "run interference."

"International 'live track' power steering moves a set and dirt and rock," states M. H. Reighard, Superinted Lop of rock operations for "Asheville." "Therefore, we be not our TD-25 and TD-24's on trail-blazing and pionen sting The 'live track' feature keeps the blade in the mate New and makes steep work safer. TD-25 balance and the working 'almost straight up' on mountainous tern need

Exclusive, years'-proved International Planet Postant steering gives you full-time live power on both to don't to handle full loads on turns as well as straightan circl Load-limiting "dead-track drag" is eliminated.



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th a metered amount of Pozzolith, as sutomatically weighed out and anharged. After a 2-minute mixing got the Koehring mixer was automatically tilted and the 2.2-yard with discharged to the wet-batch inger. By means of a push button a ground level, the concrete was justed to buckets on the waiting mate.

The batching of the three sizes of agregates and sand was done semiminimatically. Using push-button coirols to operate the gates, the past operator weighed out the prerated quantities into a single weigh



■ A Koehring 605 crane with Dillon 2.2-yard bucket places concrete for a wing wall adjoining the sluiceways. Two gate-controlled sluiceways allow the spillway to pass high flows. When they cannot handle the flow, water will pass over the spillway lip. A monolith is curing under cotton mats.



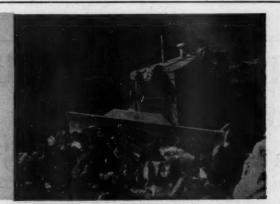
Workmen tie B-K cantilever steel forms together for a 5-foot-high lift on one of the monoliths. In the distance is a new bridge crossing the outlet channel.

# ingnoves more D-2210NEERING"

Comparcheville, No. Carolina

ring moves a retrack" power-steering is combined with on-the-go, Superinted La power-shifting that lets you match power to load erefore, we be certly, for full-speed cycles. You do away with time-grand pioneer sting "gear-shift lag!" e in the mats. New TD-25 seven-roller tracks are strength-matched

e in the mate. New TD-25 seven-roller tracks are strength-matched balance end the full effort of the high-torque, 230-hp turboattainous ten aged Diesel engine! The "25" is platformed on shockal Planet Position, double-box-beam track frames—smoothly carr on both trade and international's dual-protected Dura-Rollers, the
as straighter excellers that make 1,000-hr. lube intervals practical!



As standard equipment at no extra cost, the TD-25 gives you exclusive, combined Planet Power-steering and Hi-Lo on-the-go power-shifting. And you get this work-speeding design advantage in torque-converter or direct drive model. Here, Asheville's "25" operator is ready to "shift-up" to keep the load on the move.

straights krollers that make 1,000-hr. lube in eliminated.

Power-steer and power-shift the TD-25 with king-sized loads—around curves, upgrade, anywhere! Compare planet-powered "25" ability to deliver full-load capacity, full-time—to outearn other big rigs up to 50%—blading rock, benching, push-loading, mass-production dozing (where fast reverse and decelerator action count), ripping shale! Let your International Construction Equipment Distributor demonstrate!

Even with an enermous effset load of shot-rock there's no "bank-nosings" no sluing. The TD-25 operator simply operates the load-side track in high-speed range—the other track in low-speed range. Result: full-capacity, straight-shead performance—the same as the "25" gives on benching, bank-cutting, or ide-casting!

Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, anywhere! Yours for the asking from your International Construction Equipment Distributor!





International Construction Equipment

International Hervester Co., 189 North Michigan Ave., Chicago 1, II A COMPLETE POWER PACKAGE

### Lights warn of low bins

An inclined conveyor, fed by an American 595 crane, carried the various aggregates and sand to the overhead bins. The belt, as well as the turntable, was operated from a Dilion electric control panel at the base of the conveyor. Warning lights, mounted under each bin, signaled the control-panel operator when a bin was getting dangerously low. The lights were turned on automatically by an electric "feeler" system mounted on the walls of the bins.

The plant was turning out a 3-sack mix with sufficient Pozzolith added to yield a 5 per cent mixture of air. It was a stiff mix with between 1 and  $1\frac{1}{2}$  inches of slump.

International flat-bed trucks, each carrying two Dillon 2.2-yard buckets, hurried concrete from the plant to the spillway. The buckets were swung to the forms by either a Marion 93M or a Koehring 605 crane. The 5-foot-deep monoliths were formed with Blaw-Knox cantilever steel forms.

### King-size vibrators

Consolidating the stiff mix was difficult. But king-size vibrators solved the problem. These bomb-shaped vibrators measure a full 6 inches in diameter at the head. Manufactured by Malan Vibrator Co., the units are powered by air compressors. One man—a strong one—can handle the vibrator. During concrete placement, it was customary to use two of the large vibrators in combination with two smaller ones.

# Good production

Some continuous placement required over 500 cubic yards of concrete. With one crane swinging the concrete, a big job such as this was generally done in only nine hours. From 8,000 to 10,000 cubic yards of concrete was placed in the spillway each month.

### Personnel

For Whittle Contracting Co., S. L. Brady is the general superintendent, and W. C. Barnett is the plant superintendent. The resident engineer for Forrest & Cotton, Inc. is Robert B. Dudley, and the construction engineer is Tillman A. Riewe. THE END

-For more facts, circle No. 270



Intricate structural work being done to

# Depress expresswale

Rock supporting the concrete for a subway tunnel has to be chipped away to get a section of the Roosevelt Boulevard extension under Broad Street in Philadelphia. A Chicago Pneumatic track-mounted drill is sinking holes into the rock.

# "FOSTER Lightweight Piling is stronger, costs less, handles easier . . . PLUS"



the safety and versatility of high-strength steel sheeting.

For shoring trenches, protecting shorelines, or for any light-load protection, Foster Lightweight Piling is easy to use. It's designed for manual handling, requires no special crane or rig, and can be driven by a small air or steam hammer. An exclusive "non-jam" interlock permits simple folding together of two sections, yet Foster Lightweight Piling comes apart easily. Unlike wood sheeting, can be used over and over.

For temporary use, or to supplement current piling stocks, you can rent through Foster's Piling Rental Plan and get big savings by eliminating capital tie-up in big piling inventories.

For all types of piling, for highway and construction products, call the Foster Specialist nearest you. Write or call L. B. FOSTER CO. for Lightweight Piling Catalog CE-5. Pittsburgh 30, New York 7, Chicago 4, Houston 2, Los Angeles 5, Atlanta 8, Cleveland 35.

aster From Foster

Rental Steel-Sheet Piling . Pipe Pile . H-Pile . Lightweight Piling . Pipe . Rail

An 0.86-mile section of the age Roosevelt Boulevard extension Philadelphia, Pa., is costing over 800.000

This project, part of the \$24 m bypass connection between U.S. 1 and the new Schuylkill Expressway, w carry the extension under Bro Street. What makes the job tough is the subway tunnel that runs throat the street fill.

### Elaborate trusswork

To support the tunnel roof, street, and its live load, Buckley a Co., Inc., Philadelphia, had to co struct two concrete footings to port three 88-foot-long steel true inside the subway tunnel. First, hele were sunk through the tunnel me above the two footing locations ar the footing areas were excavated The excavation was carried through the tunnel floor to rock, and the m terial was removed by a crane of street level that handled a cla bucket through the roof holes.

The two concrete footings, bull about 88 feet apart, measure 31 feet transversely; 10 feet longitudinally; and about 13 feet deep. The top of each footing is flush with the existing floor slab of the tunnel.

The tunnel is about 57 feet wide and 16 feet deep, and is supported on rock The tunnel roof, supporting a 7-feet earth fill forming Broad Street, wa supported not only by the outside tunnel walls but by three rows of steel columns on 131/2-foot center Columns in each row, together with the concrete-encased roof and flow beams, are on 51/2-foot centers.

### Twin tracks

Between the outside column and the tunnel walls are the subust tracks-one running in each direct and these could not be disturb during construction. These tracks, on 39-foot centers, run adjacent to the tunnel walls, leaving the tunnel floor slab clear between the three rows of columns. Sections of the 88-foot-less trusses, which weigh about pounds per foot, were shipped to the project through the tunnel. Sine each is actually a double truss, they sandwich the three rows of two nel support columns, the out halves of the outside trusses hauled to the site by means of the subway tracks.

This operation was carried out I

Steel trusses had to be installed by the contractor to support the subway tunnel roof, the fill for Broad Street, and the live load of traffic. Three of these 88-foot-long trusses are supported on end concrete footings. They also incorporate the existing three rows of tunnel columns. Two of the permanent transverse floor beams are in place.

HOW

# esswiler subway tunnel



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ENGINE

(Continued on next page)

For more facts, circle No. 272->

then the hours of 1 a.m. and 5 a.m., nim subway traffic was at its lowest All the remaining truss sections sere loaded onto dollies and pulled is the site by tractors over the clear for-slab area between the column High-strength bolts were used make connections between the trus sections.

### Roof deflected

After the 88-foot trusses were set m both sides of the columns and on the previously prepared footings, steel wedges were driven between the top finge of the trusses and the tunnel mef beams. This caused the truss to defect % inch, and by welding the gusset plates of the trusses to the manel columns the contractor was she to maintain this deflection. Excaration in the area not occupied by tracks was then completed to approximitely 10 feet below subway floor level, thus freeing the center truss to take its load.

The contractor then began excavating the rock supporting the tunnel. This was done in 13-foot-long sections, from the outside and from the inside. Openings 8 feet deep were formed by drilling and chipping at alternate locations, leaving the existing rock as support for the outside walls and tracks.

### Grillage beams

As excavation progressed under the tunnel, 8-inch steel beams, in 12foot-long sections, were placed longiminally under the tunnel walls and end-supported by 12×12-inch timbers. Beyond the tunnel walls, four 18-inch steel beams were positioned longitudinally under each of the subway tracks and supported by timber posts. These grillage beams not only provided support for the tunnel walls and tracks, but formed 12-foot-wide opinings into a transverse tunnel under the subway tunnel.

Buckley then rolled a pair of 60feet-long, 5-foot-deep built-up steel ams through this tunnel to form part of the permanent floor-beam annel supports. Twelve floor beams, placed transversely on 51/2-foot centers, support the tunnel floor, walls, tracks, and the live load of the trains. The tranverse beams will be deflected about 1/4 inch by positioning 12 screw laks between the center truss and the top flanges of the beams.

capacity!



**Rock-Ribbed** 

Payhauler\*



Payhauler dump-ing with exclusive, action-speeding in-verted hoist design! ate up-and-down snubbing control pre-vents machine-punish-ing impact! Fast reverse, up to 7.1 mph., speeds spotting to dump or load!



Of all rear-dumps in their size classes, only the International 65 and 95 Payhauler models give you the weight-shedding, strength-multiplying, rockribbed corrugated bodies! You trade 2½ tons of power-wasting dead weight for 3 bonus tons of capacity in the new 95 Payhauler!

Only the 65 and 95 Payhauler models have the power "plus" of the direct-start, high-torque, 4-cycle 6-cylinder International "817" Diesel enginel The "95" is powered by the 375-hp DT-817 turbocharged Diesel; the 65" has the same basic, high-output power plant: the naturally-aspirated 250-hp D-817!

Choose the "95" with power-shift torque-converter, or 9-speed air-shift transmission. The "65" comes with 10-speed constant-mesh transmission. Both models have the load-speeding safety of reserve-area braking and "one-hand" road-holding power steering! Above, it's the "65" shown storming up a 16% grade with 19-ton payload. Compare how Payhauler gradeability speeds the cycle over other haulers!

In minimum shovel time you heap-load the big-target Payhauler body. Rugged corrugations absorb rock-shock—give high esistance to wear and distortion from ab-rasion and impact! Torque - cushioning planetary-type axles let you apply full power to start and haul full loads!

Add up the capacity-boosting advantages of Payhauler power-to-payload punch—super-speedy Payhauler loading, hauling and dumping. See how either the 19-ton "65" or 27-ton "95" can give you gear-faster climb-outs—and haul up to 14% faster than other rear-dumps! See your International Construction Equipment Distributor for a demonstration!



Here's your 76-page cost and production estimating book—newst, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, anywhere! Yours for the asking from your international Construction Equipment Distributor!



International Construction

h Michigan Ave., Chica



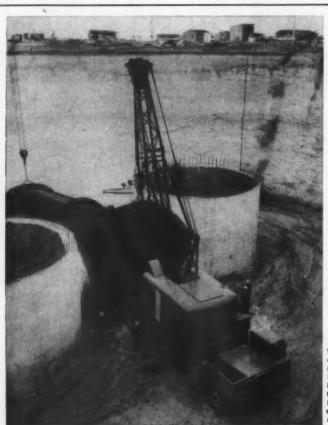
While crews work to get the expressway under the subway, excavation is being done on both sides of the tunnel. At this point, the side slopes of a cut are being shaped so that concrete retaining walls can be built.



Steel formwork is positioned for concrete beams that will reinforce the retaining walls. Concrete is placed in notches cut out of the rock. In the foreground, a C-P drill sinks blast holes.



While part of a retaining-wall section cures under a burlap, shown at left, concrete crews continue place retaining-wall concrete in steel forms that cantilled on both sides of the section.



Working on antenna silos 27 ft. in diameter and 65 ft. deep, the MC-760 makes big lifts with precision control. Its rugged carrier with a 230" wheelbase is built by Lorain to withstand the torsional stress of heavy-duty service. "Shear-Bail" Connection keeps awings smooth, reduces maintenance, and is warranted for 10 years.

# At nation's first totally underground missile base Lorain Moto-Cranes speed construction

With its Power-Set® Outriggers set for sure stability, this 65-ton Lorain Moto-Crane MC-760 positions 42-ton antenna silo terminal junctions at Lowry Air Force Base near Denver. This is one of two of this model at work here. Morrison-Knudsen Company, Inc. and Associates use the capacity and mobility of Lorain Moto-Cranes in constructing six missile comptexes of their \$67.5 million contract.

The MC-760 loses no time as it moves between jobs at each extensive complex. Power-Set Outriggers adjust to the roughest terrain in less than a minute. Move-ups take

even less time. This Moto-Crane travels 5 to 37 miles between complexes at 37 mph. At the job the "760" has the balance, control and capacity to keep output high.

Today's pace setting jobs call for reliable Moto-Crane performance. Lorain dependability is backed by over 40 years' experience in building rubber tire cranes. Progressive contractors know that Moto-Cranes get to the job faster, finish the job quicker.

For details, see your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

# LORAIN. ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio...PRODUCTS: Power shovels, cranes, draglines, clamshells, and hoes on crawlers from %- to 2½-yard capacity • Cranes from 7 to 80 tons...on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity...OUTLETS: Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 273

(Continued from preceding page)

After deflection has transferred to tunnel load to the floor beams, in screw jacks will be packed and sealed with a bituminous material and accased in concrete. Concrete for the new tunnel floor will then be placed over the top chord of the floor beams structurally tying all the element together.

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The floor beams will transfer the entire tunnel load to two 75-foot-less box girders, which will be erected a either side of, and adjacent to, the subway tunnel. All the floor beam will be tied into the box girders, each consisting of two 12-foot-deep girders on 2½-foot centers. The tunnel load will be transferred to the floor beams by wedges driven between the bottom flange of the grillage beam and the top flange of the perpendicular floor beams.

Scheduled for completion in 1981, the contract section will be depressed about 45 feet below the level of Break Street. It will consist of two 24-foot roadways of 10-inch-thick reinforced concrete.

Lou Siravo is the superintenses for Buckley & Co., and T. Carrol is the resident engineer for the Pensylvania Department of Highway Michael Baker, Jr., Inc., Rochess. Pa., is the design consultant on the contract for the highway department.

## American Hoist acquires Industrial Brownhoist

■ The American Hoist & Derrick Ca of Saint Paul, Minn., has acquired the Industrial Brownhoist Corp., of Bay City, Mich., by purchase of its outstanding stock. Industrial Brownhoist will continue to operate at Imp City as a wholly owned subsidiary. In range of products complements those of American Hoist & Derrick.

# Universal Atlas news

■ Donald C. Webster, formerly cial representative of the New York sales district of Universal Atlas Coment, a division of U. S. Steel Corp. New York City, has been made assistant sales manager. He succeeds Forter A. Hagan, who has retired.

CONTRACTORS AND ENGINEER

### of elects officers d 2 board members

ponald V. Buttenheim, president of Buttenheim Publishing Corp. and ident of the Construction Indus-Manufacturers Association, and L B. Davis, vice president of the nil International Oil Co., were ted to the Board of Directors of the International Road Federation at the board's annual meeting in Wash-

Buttenheim is one of the CIMA entatives on the IRF board. He es G. A. Gilbertson, president The Frank G. Hough Co. and a mer president of CIMA. Davis suceds F. E. Powell, who has retired tion the IRF board and from the Mehil International Oil Co.

Re-elected as chairman of the International Road Federation was Julien R. Steelman, president of the Keehring Co. of Milwaukee. P. D. Murden was elected treasurer; J. H. Olibert, secretary; Charles M. Wright, elor; and Robert O. Swain, executive director. The board re-elected mak T. Magennis, president of Goodyear International Corp., as president of the International Road Emeation Foundation.

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# Clark International

■ Clark Equipment International. ment Co., Buchanan, Mich., has acquired a 50 per cent interest in Eximis, S. A., Buenos Aires. A licensing arrangement was made under which Primia will manufacture and sell Cark's line of construction and material-handling equipment in Argen-

Eximia begins production immedistely on Clark towing tractors and fork trucks of 2,000 and 4,000-pound fork trucks and some models of Clark's Michigan tractor shovels are expected to be in production. Eximia now manufactures its own line of cranes and hoists. It has been a disinbutor for Clark for ten years.

# changes at APECO

Joseph Neuman has been made an stistant national sales manager for the American Photocopy Equipment Co., Evanston, Ill., and assigned to the home office. His place as regional ales manager for the Chicago area has been filled by Robert J. Mc-Maughton, formerly sales supervisor in the Detroit area. Gerald N. Fitzserald has taken over the Detroit

# McGraw elects secretary

Paul G. Gubbins has been elected secretary of F. H. McGraw & Co., enneers and constructors of New York, N. Y. He joined the company in 1952 as project attorney during construction of the U.S. atomic energy plant at Paducah, Ky. In 1956 he was transferred to the New York office and appointed general attorney and assistant secretary.

For more facts, circle No. 274->



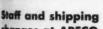


New members of the International Road New members of the International Road Federation's Board of Directors are Donald V. Buttenheim, for left, president of the Buttenheim Publishing Corp., which publishes CONTRACTORS AND ENGINEERS, and president of the Construction Industry Manufacturers Association; at left, L. B. Davis, vice president of Mobil International Oil Co., New York, N. Y.

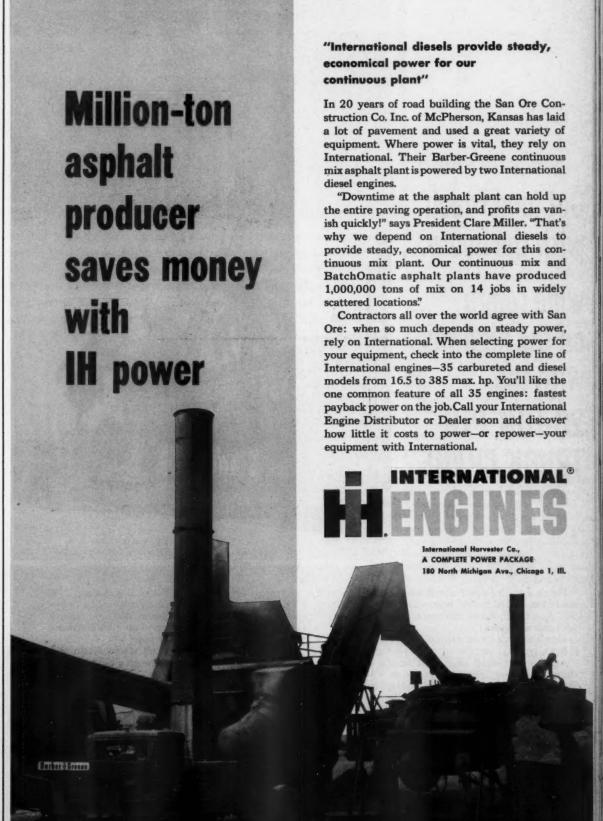
# has Argentina licensee

C. A. a subsidiary of Clark Equip-

capacities. By the end of 1960, other









# Maintenance

# Tire service is everybody's job

This Ford truck was outfitted with a specially built body and equipment by a Firestone representative for servicing the rubber-tire equipment used in enlarging Mathews Dam and Dike in southern California.

**Get long reach** with the boom

wide range on the highway with the 20-TON PaH TRUCK CRANE



Here's a truck crane that will efficiently and accurately handle 140 feet of boom (110' boom with 30' jib). Just think of how many more jobs you can do with this size boom!

Here's a truck crane with solid roadability. Drive it down any highway free of all travel regulations.

And here's a truck crane that outlifts other machines which are "rated" as much as 11% higher! We call this bonus capacity. You'll call it bonus profit.

Handling 140 feet of "stick" with the 255 B-TC is asy with independent planetary boom hoist. Raise and lower the boom under power . . . or lock it in position. What safer, more accurate operation can you get?

Economy is built in with Power Box design . . . a P&H exclusive. All gears, running in an oil bath, are completely sealed off from grime, dirt and foreign matter to reduce maintenance to an absolute minimum. Only one oil change per year!

The P&H 255B-TC shrugs off stress, strain and

impacts of rough job-terrain through all-welded con-

struction and weaveproof frame.

This is a big machine in capacity, highly maneuverable in size and very economical in operation. Contact your P&H Dealer for a demonstration. See for yourself why you will get extra production on more jobs through longer reach and greater mobility ... or write today for Bulletin TX-300.

HARNISCHFEGER



The excellent tire-maintenance tem used during the enlargement a Mathews Dam and Dike in south California emphasizes prevention tire damage and fast tire service

These are the key points in a c prehensive system that is keer rubber-tire earthmoving fleet go. Fourteen DW20's, 6 Euclid h dumps, 6 Euclid end-dumps, a gan loader, a "Euc" conveyor a truck crane, and two shovels prise the backbone of a fleet ti handling six million yards of dirt rock for the project.

Mathews Dam and Dike si 10 miles southwest of Riverside. the terminal reservoir of the Col River Aqueduct. The current \$7. 000 project is designed to incre storage capacity of Mathews from about 107,000 acre-feet to 182,000 acre-feet. This work ex the addition of 3,800,000 yards over the 7,762-foot length of existing dam. The existing dike dam will be raised about 33 Some 120,000 yards of earth is n for the new 2,690-foot-long dike, 1,800,000 yards of fill for the 6,525-foot dam. About 35,000 y of concrete is needed for the m -most of it for the new dike

Tire maintenance for fast-moving rigs that have to make hauls of 1 to 21/2 miles is a cooperative job for a Firestone representative and crews of the joint-venture contractors. Winston Bros. Co., Minneapolis, and Green Construction Co., Des Moines

### Pre-operation inspection

Harvey Ryckman, sales represent ative for Helmick's Firestone store in Los Angeles, is the man who directs service at the site, and he has three checks for the service operator to make. First, check the tire pres which should be regulated (cold) to conform to the manufacturer's recommendations. Second, inspect tires for uneven wear or misalignment; and, third, check tires for damage from rocks or other objects.

These checks help in pinpointing sources of potential trouble. If, for instance, flat spotting is discovered, this is a sure sign of uneven braking An out-of-round brake drum is often responsible. Misalignment is indicate by a featheredge on the shoulder a tire caused by the wiping acti the tire on the road surface.

Early discovery of damage rocks is important, for neglected provide a toehold for water. dirt, and other foreign matter works its way through the cuts into the plies to cause separation ultimately, failure.

Preventing tires from being aged is probably the biggest fact keeping downtime for tire serv a minimum, and the responsibilit this falls on the equipment opera Operator instruction is an imp phase of the preventive-mainte system at work on Mathews Dam

←For more facts, circle No. 275

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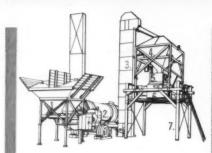
being dament factor is e service to ensibility for toperator in importantial maintenance.



The rugged Littleford Asphalt Plant is built to do the job... gives big plant quality mixes at small plant costs. Savings of 40% on producing bituminous black top are possible because you control the mix from pugmill to pavement. No more costly delays and waiting for trucks to arrive with the hot mix... with the Littleford Model 121-30 you have a plant with the flexibility and versatility to produce all types of black top mixes at the lowest possible cost. Only the Littleford Plant incorporates so many new and improved designed features and offers such a complete line of auxiliary equipment for you to custom-make a plant for your operations. You receive all the profits with A LITTLEFORD MODEL 121-30 ASPHALT PLANT.

1. 5-ton, 2-compartment dual feeder bin	Please send information on the Asphalt Plant
2. 30-len dryer with multiple flight construction	name
1. Enclosed hot elevator 4. Starage Hopper 3 5	address
5. 10 cubic foot capacity Sulthing Hopper  1 2	city zone state
6. Twin Shaft Pugmill— 1000 lb. batch	name of firm  position telephone number
7. Self-elevating platform	Littleford offices in Cincinnati, Ohio and Albany, New York

# HERE'S A SMALL ASPHALT PLANT THAT GIVES YOU BIG PLANT RESULTS



The Littleford plant incorporates many new and improved designed features that are not found on any other plant of this size. No other plant has the complete line of auxiliary equipment for you to custom-make a plant for your operations . . . you receive all the profits.

model 5-t-25 dual feeder bin





The 5-ton, two compartment dual feeder bin has a reciprocating feeder which feeds the aggregate in predetermined amounts directly into the dryer.

2 model 30t trail-o-dryer



The 30-ton dryer, with multiple flights construction, produces an "Even-Veil" of aggregate across the drum permitting quick drying, and heating of the aggregate. The combustion area is constructed of tough, heat resistant "Cor-Ten" steel. Fuel oil or gas burner available.

#### model he-30 hot elevator



The enclosed hot elevator delivers a continuous cascade of hot, dry aggregate from the dryer to the storage hopper at a rate up to 30 tons per hour.

#### model sh-100 storage hopper





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Storage hopper holds and discharges dry aggregate into batching hopper.

## model bh-10 batching hopper



Batching hopper has a 10 cubic foot capacity (1,000 lbs.) for measuring one batch for the pugmill. Weighing scales available if desired.

#### model pm-10



The twin shaft pugmill equipped with adjustable paddles is positioned directly below the batching hopper. An asphalt flow meter determines the correct amount of asphalt pumped into the pugmill.

#### model ep-30 elevating platform



The self-elevating platform permits discharging of bituminous black top directly into waiting trucks.

LITTLEFORD

rner available.

BUSINESS REPLY CARD

postage will be paid by

LITTLEFORD AIRMAIL

Bros., Inc.

453 EAST PEARL STREET, CINCINNATI 2, OHIO

Maintenance setup keeps downtime to a minimum for rubber-tire fleet on earthmoving job at dam

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pile. While operators are actually sering their rigs, they are taking eare of them. They avoid sharp rocks as much as possible and do not spin or squirm the drive wheels. Pusher operators are careful not to cut the exposed tires of a scraper when turning away from a loading run. Drivers avoid backing a dump truck against a rock to jar loose a load, since this will often snap or damage cord plies.

#### Tire service is swift

Service on the dam project is a fast-moving operation. A specially built Firestone service truck, assigned full time to the job, is manned by trained personnel. It is equipped with 40-ton air jacks and complete pneumatic-tire-changing equipment.

Tire changes are generally schedaled for periods when equipment is idle. Emergency maintenance is permed anywhere on the construction site. And the work is done fast; 29.5 x 29's can be mounted in 45 minutes. The good maintenance and service work being done on the project is only half the tire-maintenance story. This had its actual start before work been at the site, when W. L. Hastie. in charge of off-highway tire sales and service for Firestone's Coast division, met with Winston-Green to analyze tire requirements. Proper tire selection, load, haul distance, and many other factors were considered. Firestone's procedures and recommendations came into play here. Technicians recommend that equipment be weighed both empty and loaded to determine tire requirements. Tire size, ply rating, and proper air pressure are determined by the weigh-ins.

Pressure is an important factor in tire performance and life. Flotation and traction, for example, can be increased significantly by varying air pressure within limits. Also to be considered are the speed, length of haul, and road conditions.

Once the tire pressure has been determined, in-operation checks are important. Bleeding—the removal of excess air caused by heat building—is forbidden because it leaves a re underinfiated upon cooling. Tire children recommend that pressures be adjusted only after tires have allowed to cool.

In some operations, a 15-pound inrease in pressure is not abnormal. It is goes beyond this limit, the cause bould be determined and, if necesnature, corrective action taken. Overmating of tires generally can be seed to overload, excessive speeds, marinflation, or a lengthy haul. The commended speeds for short hauls but at 30 mph by Firestone, with reportionately slower speeds for moser hauls.

Repair and retreading are another

important cost factor in the off-thehighway field. Several hundreds of dollars hang in the balance each time a tire is retreaded or repaired. Before retreading or repairing is done, a thorough inspection is made of the cord body to determine whether the tire should be used on the drive wheels, front wheels, or the trailing wheels of the vehicle.

The Firestone program at Mathews Dam and Dike is simple—and it works. Good service, regular checks by equipment operators, and careful operation of equipment have kept downtime for tire service low through the halfway point of the job. And this is expected to be the case until the project is finished at the end of the year. The End

#### New Air Reduction plant under construction

■ The Air Reduction Co., Inc., has started work in Tampa, Fla., on the newest of its network of liquid air separation plants. Over 30 tons of oxygen, nitrogen, and argon will be produced in the plant per day.

The multimillion-dollar electronically operated plant occupies a 22-acre site and will be staffed by about 30 people.

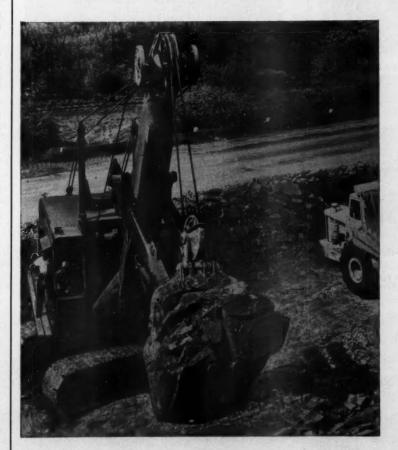
#### English firm opens New York office

■ Constructors John Brown Ltd. of London has opened permanent offices at 50 Rockefeller Plaza, New York, N. Y., to aid in contacting U. S. companies interested in building plants abroad. A. J. Smith is in charge of the office.

The company, a construction, engineering, and design organization, handles contracts in the chemical and oil industries. It also maintains a number of departments specializing in pipelines, instrumentation, and cathodic protection.

# 330,000 yards of rock removed

by this shovel rigged with (USS) Tiger Brand Wire Rope



In 15 ten-hour working days this 2½ yard shovel scooped out 30,000 cubic yards of hard sandstone, shale and clay on the rebuilding of Route 39 near Salineville, Ohio. It had just finished another job where it had excavated 300,000 yards of rock... with no appreciable downtime.

USS Tiger Brand Wire Rope provides the tough, strong muscles that keep equipment working at top efficiency. These hoist lines must take the shock of digging rock. They must resist abrasive sandstone dust and severe vibration. In spite of these rough conditions, Tiger Brand Rope gives long service life with low cost.

No matter what kind of equipment you operate—shovels, scrapers, dozers, draglines, there's a USS Tiger Brand Wire Rope designed for the job.

#### Why Tiger Brand Rope Is your best buy

It's designed by the country's leading wire rope engineers. It's made by one company that maintains the most complete research and manufacturing facilities in the steel industry. When you buy Tiger Brand, you get the right rope for the job . . . and you can get it quickly from leading distributors in your area. And your installation is no farther than a phone call away from experienced American Steel & Wire field service representatives.

For more information write American Steel & Wire, Dept. 0215, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

#### American Steel & Wire Division of United States Steel



Columbio-Senero Steri Oiridien, San Francisco, Partile Coast Distributura Tennossos Cool & Iron Division, Fairiloid, Ala., Southern Distributors



A huge Manitowac 4500 crane with 5-yard dragline bucket excavates the 10-feethick overburden along the dike alignment and loads it into Euclid bottom-dumps. Two such rigs handle this work. The material is being used for the care fill.



This Euclid with 2-compartment body pulls a shop-made form that lays 3-foot lifts of sand and crushed-stone filters along the core of the reservoir dike.



The crushed stone goes by conveyor to the outer compartment of the form; sand by another conveyor to the inner compartment. Stone is placed first to provide support for the sand.



by TONY MAVROUDIS, field editor

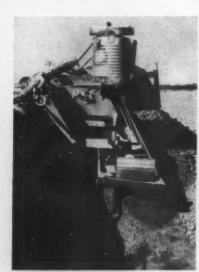
There are three big attention-getten in the construction of the 5,000-foot-long open channel connecting the Tuscarora pumping-generating plant and the intake of the Niagara generating plant at Niagara Falls, as well as the construction of the 45,000-acre-foot reservoir.

One is the big fleet of big equipment that is excavating an average of 21,000 cubic yards of rock and overburden in two 8-hour shifts for the channel.

The second is the contractor-bulk form being used to lay the sloping sand and the crushed-rock filters for the reservoir dikes.

The third is the use of 3,000 bowing pins to spot blast holes in the channel excavation.

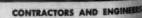
Channel Constructors, the joint venture for this \$32 million contract, consists of Peter Kiewit Sons' Ca, Omaha; Perini Corp., Framingham, Mass.; Morrison-Knudsen Co. Inc., Boise, Idaho; and Walsh Construction Co., New York City. Kiewit is the



When the "Euc" is empty, it stops, and the conveyors stop. The conveyors are then retracted under the body by hydraulic rams, and the form is released.



A pair of Gardner-Denver Air Tracs, with 25-foot drill steel and dust collectors, sink 3½-inch blast holes along the canal alignment. Excavation is being carried 100 feet deep for the canal, which is 500 feet wide and, in the forebay area, 1,000 feet wide. Air is supplied from a stationary bank of compressors through an air line and flexible hase. Bowling pins are used to spot the drilled holes. Some 3,000 of them were picked up at 30 cents aplece to avoid the need for carving wooden plugs.



gonsor for this important segment of the \$720 million project being built by the Power Authority of the State of New York.

The joint venture on this contract also had to build and maintain a crushing plant to produce over 7,300,000 tons of sand for all the Niagara Power contractors. (See "Ten Million Tons of Aggregate," C&E, May, 1959, pg. 22.) Over 6,600,000 tons of aggregate is required to produce the estimated 3,300,000 cubic yards of concrete for the entire project. The remaining aggregate production is being used in the construction of the reservoir (see.)

The open canal, about 500 feet wide along the straightaway and 1,000 feet wide at the forebay areas, will require about 100 feet of rock excavation. More than 10 feet of overburden was removed. This overburden, being used for the impervious core of the reservoir dikes, is only about one-third of the quantity required. The remaining core fill comes from excavation in the reservoir and from the conduit contractors, who waste their excavation in the reservoir area so that it can be used later by Channel Constructors.

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#### Dikes built up

Channel Constructors has devised a unique way to build up the reservoir dikes in 3-foot lifts. Equipped with four converted Euclid bottomdumps, each with its body separated into two compartments, the contractor is able to place the sloping sand filter against the compacted earthfill dike core and to place a layer of crushed rock atop the sand filter.

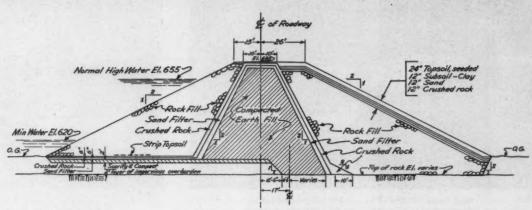
The base of the dike is about 250 feet wide. The outside half of the base is supported directly on the exposed underlying rock, while the inside half rests on a 2-foot layer of scarified and compacted impervious overburden. This impervious area extends back beyond the center line of the dike core.

The impervious layer is topped with a 6-inch sand filter and a 6-inch crushed-rock lift that extends from the inside toe of the dike to the toe of the dike core. The sand filter and crushed-rock layer then rise on a 1 to 2 slope along the side of the core, across the top, and down the opposite side. The sand-filter and the crushed-rock layers are each 18 inches thick at the top of the core slopes and 2½ feet thick at the bottom.

That means the sand-filter and crushed-rock thicknesses diminish as they rise up the slope of the dike core.

The inside area of the dike is being built up with rock fill that will remain exposed. This, and the sand and rock layers around the core, is required because the constant change in the water level in the reservoir would have a tremendous erosive effect on any other surface. Also, any quick drop in the reservoir water level would tend to suck out the fines in the dike core.

The outside of the reservoir is being built up from the underlying rock stratum with rock fill. Its 2 to 1 slope (Continued on next page)



A typical embankment section.



Parsons Model 155 digs trenches for the laying of 6" and 8" water lines in the Burlington area of Ontario.



Wm. Groves Limited uses the Parsons Model 77 for trenching work on Hydro services in the Buchanan Park land assembly project, Hamilton, Ontario.



The Parsons 250 will soon be at work trenching for 12" water mains for City of Hamilton. Mr. Groves' experience leads him to expect up to 1,300 ft. per day on this job.

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# RATED SUPERIOR



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That's the convincing statement of William L. Groves, President, Wm. Groves Limited, Sewer Contractors located at 800 Rennie Street, Hamilton, Ontario. Top performance is a design qualification for every Trenchliner. This is the reason contractors the world over look first to Parsons. There's a Trenchliner to fit your requirements. Ask your distributor for full details on the complete Parsons line.

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NEWTON, IOWA





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GINEERS



Rock blasted in lifts of 22 or 23 feet is loaded out by Bucyrus-Erie 150-B shovels with Esco 6-yard buckets to Easton 20-yard side-dump wagons. Euclid tractors are being used to pull the wagons.



An Easton side-dump wagon, pulled by a Euclid trac-tor, dumps rock fill for the reservoir dike. Note the crushed-rock filter material separating the rock fill from the center earth-filled core of the dike.



Mail to C. S. JOHNSON CO., Champaign, III.ion en ...... eu. yd. light-weight concrete bucket NAME STREET CITY, STATE



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#### \*CURVE CROWN DESIGN

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#### STURDY BIM

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re facts, use coupon or circle No. 280

Dike lifts Channel Constructors is building

topsoil.

(Continued from preceding page)

will be covered with 12 inches of

crushed rock, 12 inches of sand, 12

inches of clay, and 24 inches of seeded

up the entire width of the dike in 3-foot lifts. The earth fill for the core is placed and spread in 6-inch layers. then compacted by sheepsfoot rollers until a 3-foot lift is completed. A grader shapes the 1 to 2 side slopes of the core fill before the sand-filter and crushed-stone layers are accurately placed against the slopes by a contractor-built form.

#### Form rests against slope

The steel form, placed against the prepared core slope, consists of an inner and outer compartment tied together by the framework of the form. It rests directly on the side slope and the dike rock fill with the bottom and rear of both compartments open.

Sand-filter material and crushed rock are hauled to the forms by converted 2-compartment Euclid bottom-dumps. Each compartment is equipped with a hydraulically operated conveyor that transfers sand and crushed rock simultaneously to the forms. Body vibrators help loosen the material during unloading.

The form is attached by cables and steel bars to the side of the Euclid, which rides atop the core fill. After the form is hooked to the Euclid, the conveyors are extended to their respective form compartments. Once the belts are started, the Euclid begins moving forward, pulling the form along the face of the core slope. Channel Constructors originally had hydraulically operated gates under each of the Euclid's compartments to feed the side conveyors, but these were removed because they jammed and slowed the operations.

With the gates removed, the sand and crushed rock flow freely through the compartment openings; the conveyor belts act as the only plug. Once the belts are activated, the material flows. When they stop, the flow is automatically halted with little or no loss

The double form has been designed



WISCONSIN Model 1000

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EASY DOWN deck action and

low load angle saves time every

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CHECK THESE ADVANTAGES ugged 2" oak deck 8' wide

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#### WISCONSIN TRAILER COMPANY, INC.

Phone HUBERTUS 108

For more facts, circle No. 281

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CONTRACTORS AND ENGINEERS



Rock fill for the reservoir dike is spread by a Cat D8 tractordozer near the crushed-rock and sand filters separating rock fill and earth-fill core, left.

foot drill pattern to sink the 3½-inchdiameter holes across the five 100-foot blocks spanning the canal width. Atlas, Du Pont, and Hercules explosives are being used for about each third of the project. Up to 15 millisecond delays are being used per blast to hold down the shock in the adjacent ledges. Sections are blasted toward the center-shot opening to protect the side walls of the canal.

#### **Bowling pins**

The drilling crew has at its disposal about 3,000 bowling pins to spot the drilled blast holes and keep the holes clean and dust free. Channel Constructors picked up the used pins from a local bowling alley at about 30 cents apiece for just this purpose. The crew finds this a handy way to

spot the 3½-inch-diameter holes, and it eliminates the need for making the wooden plugs generally used.

Channel Constructors is blasting the 100-foot-deep canal in about 5 lifts. The top lift is about 16 feet deep, and the remaining four lifts are about 22 or 23 feet deep.

Each Air Trac drill uses a Timken carbide-insert bit. The bits are resharpened to extend their life in drilling through the dolomite stratum.

Excavation equipment includes four Bucyrus-Erie 150-B shovels, equipped with 6-yard buckets, which are spotted in pairs on different bench levels. A Northwest 80-D crane is used with a breaking ball to handle any secondary breaking of blasted rock.

Two giant Manitowoc 4500 draglines with 5-yard buckets are used to

to permit crushed rock to be loaded into the outer compartment and sand into the inner compartment adjacent to the core slope. It also provides for the crushed stone to be placed ahead of the sand filter in order to provide adequate support and proper slope streament of the filter.

ILITY

IENCY

The steel plate separating the sand and crushed-stone filters can be adjusted by boiting it to the manyhold crossbar of the form. This adjustment is necessary to properly shape the diminishing thickness of both filters as the dike increases in hight.

After a Euclid discharges its load, it merely stops, halting operations. The conveyors are then retracted by hydraulic rams to a position directly under the Euclid body. After releasing the form the Euclid returns to the aggregate plant for another double load. A hydraulic pump, driven from a power takeoff on the Euclid tractor, powers the motors of the conveyors and the retracting and extending rams.

Work on the dike is coordinated so that all phases rise in 3-foot lifts. This includes the impervious core, the and filters, the crushed rock layers, and the outside rock fills. The various layers atop the dike's outside 2 to 1 slope will be placed after the dike reaches its average height of 60 feet. These layers will be built by dumping the material from the top of the dike.

#### Canal excavation

Channel Constructors is equipped with a huge fleet of hauling equipment that includes 30 Easton 20-yard side-dump wagons pulled by Euclid tractors, eight Euclid bottom-dumps to haul overburden, 2 Euclid twinengine scrapers for overburden and roadway excavation, and about 5 Euclid end-dumps.

The drilling equipment on the job includes 7 Gardner-Denver Air Trac drills, powered by stationary Joy compressors and supplied with air through an air line. Line drilling is being handled by two Ingersoll-Rand bar-drills that sink 6-inch-diameter holes on 5-foot centers. Between these holes, three equally spaced 2½-inch-diameter holes are sunk. Average depth of holes is about 20 feet, and 25-foot drill steel is being used. The contractor has an 8½×8½-

In Galt, Ontario, busy BuffaloSpringfield KT-8 works and
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an important time-saver on
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eliminate hand-tamping.

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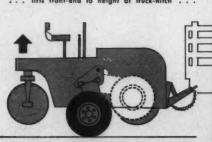
fold-away towing wheels on KT-8 roller let you work closer to side-obstructions... make faster job-to-job moves

Towing wheels on the 4-6 ton KT-8 roller fold away — and out of the way — into main frame. Gives operator a clear view of his work. Lets him roll within inches of abutments, poles, buildings, fences... without removing towing wheels. No other roller on the market offers you this advantage.

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ALO-SPRINGFIELD COMPAN



After hitch is secured, more down-pressure is applied till balance point is reached. That's all there is to it!

SPRINGFIELD, ONIO (DIV

For more facts, use Request Card at page 18 and circle No. 283

excavate the overburden-averaging about 10 feet thick-that is needed for the core fill.

The reservoir, scheduled for completion by 1961, will require a total of about 7,800,000 cubic yards of all types of fill material, while the canal excavation will amount to about 9,589,400 cubic yards—over 90 per cent of it rock.

Heading Channel Constructors' field operations is Peter Kiewit's Lee Rowe, project manager, Frank Dickey is the project engineer; Lynn Arbogast, the mechanical superintendent: Ed Pearson and Ray Shepherd, the shift superintendents: and Ray Condos, aggregate-plant super.

John Saunders is the blasting superintendent: Les Pyle, the drilling superintendent; and Loren Hollins, the safety engineer for the contractor.

Clyde Shields is the resident engineer on the job for Uhl, Hall & Rich, Boston. Mass., the consulting engineering firm supervising construction for the Power Authority of the State of New York. THE END

#### Heliport department initiated by Rader

Rader & Associates, Miami, Fla., has set up a department especially for heliports, which are becoming increasingly popular for providing short-haul transportation between airports and seaports and their surrounding communities.

Contributing to the importance of vertical takeoff and landing aircraft (VTOL) is the growth of metropolitan airports and their increasing distance from cities. The traffic congestion on the ground is another factor.

A heliport generally requires from a half-acre to five acres, depending on the extent of services that it offers. Proper location takes into consideration public safety and possible noise nuisance, zoning laws, aircraft regulations, and prevailing traffic patterns in the air and on the ground.

The Rader heliport engineering group is making a study of design developments and municipal and federal regulations applying to helicopters, in order to develop criteria for ideal ground facilities. Rader & Associates is one of the country's largest engineering and architectural consulting firms. They have masterplanned expansion of airports and seaports in many parts of the world.

#### **Ko-Cal names Williams** sales representative

E. Lee Williams has been appointed special sales representative by Koehring California Co., Stockton, Calif., a division of Koehring Co. He will work with Ko-Cal distributors in 11 western states. Williams was formerly with the Yuba Mfg. Co.

Georgia and Alaska have passed legislation to divert highway user tax revenues to other purposes. New York and Colorado defeated it.

For more facts, circle No. 284-

FIRST RUBBER EXPANSION JOINTS installed for a prestressedconcrete taxiway are inspected by Capt. V. C. Bertelsen, USN, A. Kinnamon, and E. O. Bergholdt at Lemoore Naval Air Station in California, a new master jet base to be completed in 1961. Extending 75 feet across each end of the taxiway, the joints, made by B. F. Goodrich. Akron, Ohio, act like the bellows of an accordian to absorb expansion and contraction, yet stay level with the concrete surface. They were installed by the Griffith Co., Los Angeles and San Diego.



# MIGHTY... HEALTHY... POWER

Whether your choice is the 225-hp HD-21 or the 150-hp HD-16, you get from 81/2% to 27% more efficient engine operation than from other crawlers.

This fuel-pinching efficiency is a fact! Your Allis-Chalmers dealer will show you actual proof of up to 27% fuel savings in the Allis-Chalmers 16000 or 21000 engines over units of comparable size. He'll tell you why they run cleaner : . . how they "sip" fuel to earn the title "industry's healthiest engines.

Six crater-shaped pistons develop 225 hp in the HD-21, 150 hp in the HD-16... both at an easy 1825 rpm. Coupled with torque converter drive, they provide plenty of rough dozing lugability . . . all the power you'll ever need.

These big Allis-Chalmers tractors are built for mighty tough service. Shock-absorbing all-steel main frame, durable doublereduction final drives, certified permanent lubrication of tapered roller bearing truck wheels, idlers and rollers, and extra tough track keep them going season after season with a minimum of maintenance. Your Allis-Chalmers construction machinery dealer will be glad to show you an HD-21 or HD-16 soon. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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power for a growing world

#### H Chicago factory

The Tractor Works plant of International Harvester Co., Chicago, is schrating its 50th anniversary. It is set of five I-H plants in the Chicago are and one of three in the Condirection Equipment Division.

The Tractor Works started operations in 1910 by building 17 huge metion-drive wheel tractors. A force of 196 men did the job in a barn and a tent. Today, the plant consists of muldings situated on an 82-acre tract. The factory turns out four basic models of crawler tractors, the International T-6 and TD-6, TD-9, TD-15 and TD-20, ranging from 50 to 134 net engine horsepower, and matching units of hydraulic and cable-operated bullgraders and bulldozers.

#### Movie made on water need

■ Water conservation is the subject of a 27-minute film just released by Caterpillar Tractor Co., Peoria, Ill., and available through Cat dealers. It tells how various areas have solved water problems and what yet remains to be done. Entitled "Water Bill U.S.A.," it is narrated by Walter Cronkite.

#### Huber-Warco starts a Brazilian branch

■ A plant in Brazil has been opened by Huber-Warco Co., Marion, Ohio, manufacturer of motor graders, road rollers, and maintainers. The company has marketed in Brazil for more than 20 years.

Organized as Huber-Warco do Brasil, S.A., the new plant is operating as a wholly owned subsidiary of the parent company. Dr. Quirinto Goulart is president, and Jack King, Huber-Warco's South and Central American district sales representative for the past five years, is executive vice president.

For the present, the company will concentrate on the production of motor graders. It hopes to manufacture eventually the entire line of Huber-Warco products for the Brazilian and other South American markets.

The plant consists of three concrete and brick buildings on a 20-acre site, located about 20 miles northeast of Sao Paulo.





Bucyrus-Erie 51-B shovels with 2-yard buckets load Euclid rear-dumps with rock blasted from the alignment of a new interstate route north of Boston. Another shovel with a  $1\frac{1}{2}$ -yard bucket rounds out the shovel fleet, which handles an average of 4,000 yards of rock daily on the Job.

## Shovel fleet digs in

to move some 4,000 yards of rock per 10-hour day on interstate job

Three shovels have been moving more than 4,000 yards of rock in a 10-hour workday for C. J. Maney Co., Inc., Lexington, Mass., on a 2.59-mile stretch of Interstate 93 north of Boston.

This is a \$4,658,000 contract, located between Medford and Stone-ham. It involves 886,000 yards of rock and 280,000 yards of earth excavation, 68,000 yards of peat removal, 175,000 yards of borrow, 200,000 yards of gravel borrow, and 272,000 yards of gravel for dike embankments, together with construction of three bridges and the installation of about 30,000 linear feet of 12 to 60-inch drainage pipe.

#### Sublets rock work

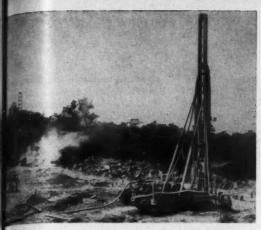
C. J. Maney sublet the rock drilling and blasting while concentrating on the excavation of the roadway and the construction of dikes. The roadway alignment, for about 1,200 linear feet, crosses an existing reservoir-Spot Pond—that supplies Stoneham and Wakefield, Mass. About 40,000 cubic yards of muck has to be removed from the reservoir bottom before roadway fill can be placed. This fill, averaging 50 feet in depth, is necessary to form an embankment in the 30-foot-deep reservoir. Most of the roadway excavation is being used to build up this fill.

A dike is also being built parallel to the roadway fill to protect the water in the reservoir from pollution by the peat excavation. Borrow material is being end-dumped over the edge of the dike, which is kept about 400 feet ahead of the roadway fill



Cat rock wagens helped control the dust problem along the haul route. They are loaded with water at the reservoir and dump as they head back to





two Joy air-powered drills sink 4½-inch blast holes into a rock outcrop along the roadway alignment. Two Joy 900-cfm compressors power the drills.



excavation is done ahead of work on the fill that crosses a reservoir. The Bucyrus-Erie 37-B 1½-yard clamshell loads a dump truck as a Cat rock wagon dumps fill and an Allis-Chalmers HD-16 spreads the material.

# Specify the MODEL

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edfor YOUR job!

	SPUTTER		DEEP REDUCTION
MODEL	High	inter- mediate	Low
3-A-65	.754	1.00	2.221
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3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
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For HEAVY DUTY, specify the 92 Series: Ratios

	SPLITTER	RATIOS	DEEP
MODEL	Righ	Inter-	Low
3-A-92	.74	1.00	2.09
3-B-92	.84	1.00	1.24
3-C-92	.75	1.00	2.64
3-0-92	.75	1.00	1.24
3-E-92	.84	1.00	2.09
3-F-92	.84	1.00	2.64
3-G-92	1.00	1.327	2.09
3-H-92	1.00	1.327	2.64



P. S. Fuller also offers three heavy-duty 3-speed Auxiliaries with built-in high-torque power take-off. Ask your dealer about the Fuller 3-T-92 Series Auxiliaries.

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For more facts, use Request Card at page 18 and circle No. 285

operations at all times. This dike and another one that will be required to the north when the roadway again crosses an edge of Spot Pond Reservoir are being brought up to an elevation 2 feet above the water level of the reservoir. Once the roadway is completed, the dikes will be trimmed off to a point 6 feet below the water's surface.

#### **Equipment at work**

Maney is using two Bucyrus-Erie 51-B shovels equipped with 2-yard buckets and a Northwest 6 with a 11/2-yard bucket to load the six Euclid 18-yard rear-dumps and the two Cat 22-yard rock wagons pulled by DW21's.

Other excavating rigs include a Northwest 11/2-yard backhoe, two Lorain truck cranes, and a Bucyrus-Erie 37-B with a 11/2-yard clamshell to handle the peat excavation. About 31,000 vards of this material is being stockpiled for later covering of the 40foot grassed median strip and the side slopes. Tractor-dozers on the jobneeded to push out the dikes as well as the roadway fill-include three Cat D8's, an Allis-Chalmers HD-20, an HD-16, and an International TD-24. Another HD-20 is equipped with a 4-yard front-end-loader bucket.

The project, scheduled for completion by the end of 1960, will provide two 50-foot roadways, separated by a 40-foot grassed median and flanked by 10-feet outside shoulders.

#### Personnel

Merrill S. Lydic is the superintendent and Louis Ruccolo, the assistant superintendent for C. J. Maney.

THE END

#### Two promotions made by Joy Mfg. Co.

Arnott J. Lee is the new manager of portable compressor products for Joy Mfg. Co., Pittsburgh.

Lee's former post of district sales manager for Joy's Mining and Construction Division in the Chicago and St. Louis territory has been filled by Mayo C. Kelley.

Lee will be located at Joy's Michigan City, Ind., plant, where he will be responsible for product planning and merchandising of the company's line of portable air compressors.

GINEERS

#### **Labor Review**

#### New Jersey teamsters ask Hoffa's birthday as paid holiday

Northern New Jersey teamsters, with hourly wages in the construction industry now ranging from \$2.85 to \$3.10, proposed a new agreement raising rates \$1 at the low end and 90 cents at the top.

In addition, the union asks that health-welfare benefits, which now cost employers \$30 per man per month, be expanded; that pension contributions be raised to 20 cents per man per hour; that vacations be increased to a maximum of 18 days for employees who work 175 days during the year; and that employees be granted five additional paid holidays, for a total of 14.

Among the paid holidays the union proposes are the employee's birthday and general president James R. Hoffa's birthday.

#### United Association signs 2-year contract with National Constructors

The United Association and the National Constructors Association recently entered into their first 2-year agreement. The new contract raises the minimum wage scale 20 cents an hour, and provides for higher employer contributions for training if the established national fund falls below \$1 million for four months.

The agreement runs until March 31, 1962, with a wage reopener on 60 days' notice at the end of the first year.

The minimum wage scale for journeymen is raised to \$3.05 an hour. Foremen are guaranteed at least \$3.30. These rates are minimum and apply only in areas where United Association locals have not negotiated higher rates. National contractors agree that wherever a local's contact provides for a higher straight-linhourly rate, or for a higher overlinrate, the higher rate will be paid

Local agreements prevail also a hours, holidays, and vacations, union the national agreement is more lateral. The national agreement provide for a 5-day, 40-hour week, Monday through Friday, and for time and one-half for overtime. Shift work is permitted at a 15 per cent premise.

National contractors are require to pay into local health-welfare, pasion, and vacation funds. However, unless they participate in local negtiations and become parties to local agreements, they are exempt from local apprenticeship and training funds, paying, instead, into the international Training Fund.

Under the new agreement, mployer contributions to the training fund continue at 2½ cents an hour. But if the fund should drop below the level of \$1 million for four consecutive months, the contribution will be increased to 3 cents an hour and remain at that figure until the fund tops the million-dollar mark for four consecutive months.

## Operating engineers accept 3-year pact in southern Illinois

Southern Illinois contractors and operating engineers have agreed on wages for the next three years.

The new agreement, which became effective April 1, will raise wages a total of 15 to 60 cents an hour. Operating engineers employed by the Associated General Contractors in the Springfield, Ill., area, including Highway District 6 and part of District 5, are covered by the contract.

#### Carpenters open talks in Miami area; welfare plan stressed

Employer-financed welfare programs topped the list of demands made on southern Florida contractors by several Dade County crafts whose contracts ran out recently. The unions also asked for wage increases and other contract changes.

"Hottest negotiations," according to an employer spokesman, were between the Carpenters and the Associated General Contractors. Some 7,000 workmen in the Miami area are represented by the Dade County Carpenters District Council. The expired contract provided for an houry journeyman rate of \$3.40 and no fringe payments.

#### Baltimore AGC, laborers see eye to eye on 2-year contract

A settlement on a 2-year contract is reported between the Baltimore, Md., contractors and the laborers.

Under the agreement, laborers previously earning \$2.15 an hour had 7% cents added beginning April 1 and will receive 7½ cents more on the anniversary date next year.



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ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT



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Wide Base\*

Super Rock Grip
Deep Tread\*

TUBELESS OR TUBED

Copyright 1960, The Firestone Tire & Rubber Co.

Firestone T.M.

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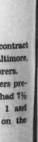
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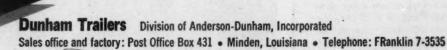
New Exclusive Dunham design uses 10,000# single axle tractor yet carries 22 ton legal payload, almost same as tandem tractor rigs costing much more . . . a big saving in capital investment.

Triple cylinder hoist offers ultimate in security and operating performance for frameless trailers.

Ruggedly built for off-road on-road operation.

Versatility makes it ideal for hauling coal, light weight aggregates, raw sugar, cement, lime, sand, gravel, dirt, clay or iron ore. Delivers asphalt through all make spreaders . . . delivers dry-batch through concrete pavers.

Cut your operating costs... be competitive ... "Let a DUNHAM carry your load!"



Manufacturers of Hydraulic Dump Traiters . Hydraulic Dump Truck Bodies . Truck Mountad Concrete Mixers

Georgia New York Colorado Norti South Carolina Minnesota Virginia

#### **Manufacturers Memos**

E. Don Tull, president of Cummins Engine Co.



E. Don Tull has been elected president of Cummins Engine Co., Inc., Columbus, Ind. He replaces R. E. Huthsteiner, who resigned. Tull has been with the firm for 32 years, working up from the shop to the posts of manager of manufacturing, vice president and general manager, and executive vice president. The company produces diesel engines for construction and mining equipment, marine applications, oil-field installations, logging, diesel-electric generating sets, and other industrial uses.

Universal Atlas Cement Division, U. S. Steel Corp., New York City, has appointed James E. Taylor assistant to the vice president of the general sales division. The division also has made several promotions in its central sales region. Wendell R. Doolittle, Jr., is now manager of sales for the region, succeeding the late Frank J. Whitman. Auwell Fogarty is sales manager of the metropolitan Chicago sales district. Roy D. Holloway is sales manager of the Illinois sales district, and Edward J. Lonergan is assistant sales manager. Charles E. Newton is sales manager for the Indiana-Michigan sales district, and Eugene J. Dwyer is assistant sales manager.

Duff-Norton Co., Pittsburgh, has promoted Richard G. Noite from vice president and general manager to executive vice president. Two other company executives have been made vice presidents: T. W. Krueger, former general sales manager of the Jack Division, to vice president and general sales manager; and Cleighton Hilbert, previously general manager of the Coffing Hoist Division, to vice president of manufacturing.

The company is consolidating its Jack Division in Pittsburgh and its Coffing Hoist Division in Danville, Ill., in a new plant now under construction at Charlotte, N. C. The general office and plant operations at Charlotte will be under the direction of Nolte, who continues to serve on the board of directors.

The Douglas Fir Plywood Association has named David R. Countryman to the newly created post of manager of research and engineering. He will direct the work of Applied Research and Product Research, two sections in DFPA's Tacoma, Wash., laboratories.

Daniel H. Brown, research engineer, takes over Countryman's former post as manager of Applied Research. Two vice presidents have been appointed by Hercules Motors Corp., Canton, Ohio. Lawrence G. Downey has been named vice president in charge of sales, and George W. La Salle, vice president in charge of engineering.

A. D. Wilson has been appointed manager of the Phoenix, Ariz., branch of Trailmobile, Inc., Cincinnati. He was formerly the branch's service manager. R. J. Kent has been promoted from used-trailer manager of the company's Southwest Division to manager of the Jacksonville, Fla., branch.

Walter A. St. Clair has been appointed sales manager of the Industrial Truck Division, Hyster Co., Portland, Ore. The promotion puts him in charge of the company's industrial truck sales activities in the United States and Canada.

Growth of an intensive training program for retail sales personnel has caused the firm to create a new sales training department. Pete Lewis will continue to be in charge of the program with the title of sales training manager.

George W. Green has been appointed advertising and sales promotion manager, supervising all advertising and sales promotion activities for Hyster's domestic and international divisions.

Sam Jones, Jr., has been named manager of the Baltimore office and warehouse of Universal Form Clamp Co., Chicago. For the past several years he served as a sales engineer.

The board of directors of General Motors Corp. has elected Harold H. Dice a vice president. Dice recently became general manager of the orporation's Allison Division, Indianapolis, succeeding E. B. Neill, who retired.

Az

# SPICER HEAVY-DUTE STAND UP UNDER THE

Tough Spicer Heavy-Duty Clutches run cooler, last thousands of miles longer on any job where extreme torque loads are being controlled. Many truck fleets report Spicer clutch life of 200,000 miles or more! And it's no wonder, for Spicer Clutches have these built-in advantages.



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Ken C. Thomas, vice president in charge of manufacturing and enof manuineering Drainage & Metal Products.



advancements have been made in the executive ranks of Armeo Drainige & Metal Products, Inc., Middletown, Ohio. Ken C. Thomas has been appointed vice president in charge of manufacturing and engineering, a newly created position. G. Russell Betts will succeed him as division manager of the company's Great Lakes Division, with headquarters in South Bend, Ind.

Challenge-Cook Bros., Inc., Los Angeles, has appointed William L. Walsh manager of sales promotion and advertising. This department will also be responsible for market research, sales training, and exhibits.

E. E. Westerback has been named southeast region sales manager by the Construction Equipment Division, International Harvester Co., Chicago. Formerly territory manager

of Oakland, Calif., Westerback succeeds E. L. Boughton, who is handling a special assignment. Ronald B. Koivisto, former territory manager at St. Paul, replaces Westerback at Oakland.

Loring S. Brock, former manager of structural and plate products for U. S. Steel Corp., Pittsburgh, has been named executive vice president of the U.S. Steel Products Division.

H. Wallace Rowles has been appointed to Brock's previous post. Rowles, former assistant manager of structural and plate products, is succeeded by Dale L. Armstrong.

Assistant sales manager I. K. Ackmann has been given new responsibilities by Insley Mfg. Corp., Indianapolis. He will assist R. J. Boatman, sales manager for the eastern-central regions, as well as J. Ray Elliott, vice president and sales manager of the newly established western region.

Executive vice president W. T. Elliett will also function as director of sales. L. R. Russell has been appointed director of engineering; and K. W. Randall, advance research engineer.



The new general sales manager of construction ma-chinery of the chinery of the South Bend Divi-sion of Curtiss-Wright is Joseph

Joseph Albiez has been made general sales manager of construction machinery for the South Bend Division of Curtiss-Wright Corp., South Bend. Ind.

Since the company's entry into the construction machinery field, Albiez has been active as product sales manager and as technical sales manager.

C. V. Adams, vice president of engineering, of Vulcan Iron Works Inc., Chicago, has been named to the post of general manager of the newly created Steam Dynamics Division. This division will manufacture standard and custom-built machinery for industrial and construction work.

Dr. Charles Edward Leyes has been appointed director of building-products laboratories of the Sonneborn Chemical & Refining Corp., New York City. He was previously assistant to the technical director of the Plastics Division of the Celanese Corp. of America.

Keehring Co., Milwaukee, has appointed E. A. Smith director of foreign operations and has elected Vincent R. Peterson secretary of the company. Smith will be in charge of all Koehring's overseas manufacturing and licensing activities. He replaces F. H. Heine, who has retired.

The LeTourneau-Westinghouse Co., Peoria, Ill., has appointed Richard Larson as wire-rope sales representative to a central territory that covers Ohio, Indiana, Michigan, Wisconsin, Illinois, Minnesota, Iowa, North and South Dakota, Kansas, Nebraska, and Missouri, Larson succeeds Robert Paustian, who has been transferred to Salt Lake City.

William F. Humphrey has been appointed director of sales of the Marine and Industrial Engine Division, Chrysler Corp., Detroit. He succeeds L. E. Nelson, who has been vice president of sales of the division. Nelson rejoins the Automotive Sales Group of Chrysler.

# UTILUTCHES BEAT THE HEAT, THOUGHEST PUNISHMENT!

Internal Adjustment—provides a method of restoring the clutch to "like new" capacity. This is accomplished by means of an adjusting ring which can be turned as wear occurs.

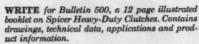
Pressure Springs—entirely free of contact with the pressure plate. This greatly reduces the possibility of leat set of springs with subsequent loss of capacity.

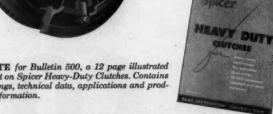
Uniform Contact Pressure-eliminates uneven wear.

- Smoother Engagements—flexing of multiple levers produces cushioning effect, eliminating the need for a more expensive cushion disc.
- Reduced Friction-less pedal effort to release clutch.
- Release Parts Furnished with Clutch—no further engineering or purchase of parts is necessary.
- No Special Tools Needed—maintenance performed without expensive special tools.



Spicer Heavy-Duty Clutches are available in 13° 2-plate, 14° single and 2-plate, and 15½° single and 2-plate sizes. All Spicer Heavy-Duty Clutches are available with ceramic facing for added torque capacity.





CORPORATION

Toledo 1. Ohio

Serving Transportation—Transmissions • Auxiliaries • Universal Joints • Clutches • Propeller Shafts • Power Take-Offs Torque Converters
 Axles
 Powr-Lok Differentials
 Gear Boxes
 Forgings
 Stampings
 Frames
 Railway Drives Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario For more facts, use Request Card at page 18 and circle No. 288

HGINEEKS



G-E ELECTRIC DRIVE

# CUTS YOUR HAUL COSTS

Maximum Horsepower Utilization • Increased Grade Ability • Lower Maintenance • High Capacity Dynamic Braking • Greater Maneuverability • Longer Tire Life • Simple Operation • Proportioned Power • Bonus Productivity



General Electric MOTORIZED WHEEL DRIVE cuts haul costs below those of comparable mechanical drives. This highly efficient drive outperforms other drives under all operating conditions, provides increased maneuverability, greater reliability, and requires less maintenance.

THE MOTORIZED WHEEL is a G-E traction motor bolted to the side of the vehicle and mounted within the rim . . . completely elimi-

nating the need for axles, transmissions, differentials, and drive shafts. Electric power is supplied by an engine-driven generator.

FOR MORE INFORMATION on how you can put G-E's MOTORIZED WHEEL DRIVE to work and cut your haul costs, contact your nearby General Electric Apparatus Sales Office—or write to MOTORIZED WHEEL, General Electric Company, Section 102-01A, Schenectady 5, N. Y.

Progress Is Our Most Important Product

GENERAL & ELECTRIC

For more facts, use Request Card at page 18 and circle No. 289

ENGINEERS

#### Caribbean market

■ A 12-page illustrated report is available that shows the size and potential of the Caribbean construction market. Entitled "Construction Caribbean," the booklet describes a rapidly growing \$17 billion market for material and maintenance equipment. Copies can be obtained from Dept. PR, Economic Development Administration of Puerto Rico, 666 Fifth Ave., New York 19, N. Y.

#### Aero Service division

■ A new Systems Engineering Division has been established by Aero Service Corp., Philadelphia, Pa., to aid government agencies and prime contractors now working on satellite

reconnaissance, aerial intelligence, and other space-age projects.

The services are described in a 16page report available from Aero Systems Engineering Division, Aero Service Corp., 210 E. Courtland St., Philadelphia 20, Pa.

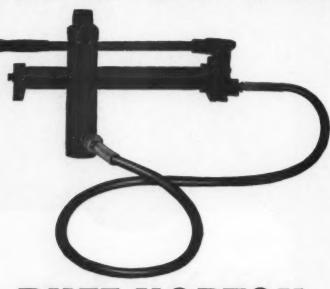
#### Heltzel representative

■ A new regional representative for the Southwest has been appointed by The Heltzel Steel Form & Iron Co., Warren, Ohio. J. W. Coppock, Jr., will represent the company's complete line of concrete batching plants; forms; concrete finishing equipment; buckets; and material storage and handling equipment. He will serve distributors in eight southwestern states.



QUARRY WORK at Weeping Water, Nebr., is a continuous operation to supply rock in all sizes for road and concrete aggregate. The 4-wheel-drive Model H-70 Payloader with 7,000-pound capacity, made easy work of handling heavy rock for its owner, J. D. Schwartz Quarries of Lincoln, Nebr.

# **VERSATILE POWER PACKAGE**



# DUFF-NORTON RAM-PAC® HYDRAULIC RAMS AND PUMPS

The Duff-Norton Ram-Pac line provides a versatile source of power to apply from 10 to 100 tons of force in any direction—with little effort.

The twelve rams may be used with the hand or power pumps as portable sources of power for adjusting, testing, bending—pulling gears, sleeves and cylinder linings—pushing pipe or culvert—for heavy moving and lifting. They also

are used for permanent installation in hydraulic jigs, fix-. tures and presses.

The five pumps include two hand pumps, an air-hydraulic pump, an electric pump and a gasoline powered pump. Attachment units, accessories and fittings further increase the versatility of the line. For description and specifications ask your distributor or write for Bulletin AD-90S.

# **DUFF-NORTON JACKS**

P. O. Box 1889 . Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION . Danville, Illinois

DUFF-NORTON JACKS Ratchet • Screw Hydraulic • Worm Gear



COFFING HOISTS

Ratchet Lever • Air
Hand Chain • Electric

for more facts, use Request Card at page 18 and circle No. 290

#### World's tallest structure is now being erected

■ A television antenna tower, now being built by Dresser-Ideco Co., Columbus, Ohio, will rise to a height of 1,676 feet, 204 feet taller than the Empire State Building. Under construction for station KFVS—TV, Cape Girardeau, Mo., it will top a planned Russian tower by 9 feet.

Triangular in shape, the structure is to stand on a concrete base, supported by 18 steel guy cables anchored in concrete. The weight of the tower and its guy cables will exert a pressure of over 2 million pounds on its base.

A small service elevator is planned to go to the observation platform at the top, more than a quarter of a mile high. It will be the longest elevator ride in the world, taking 25 minutes.

Dresser-Ideco has designed and

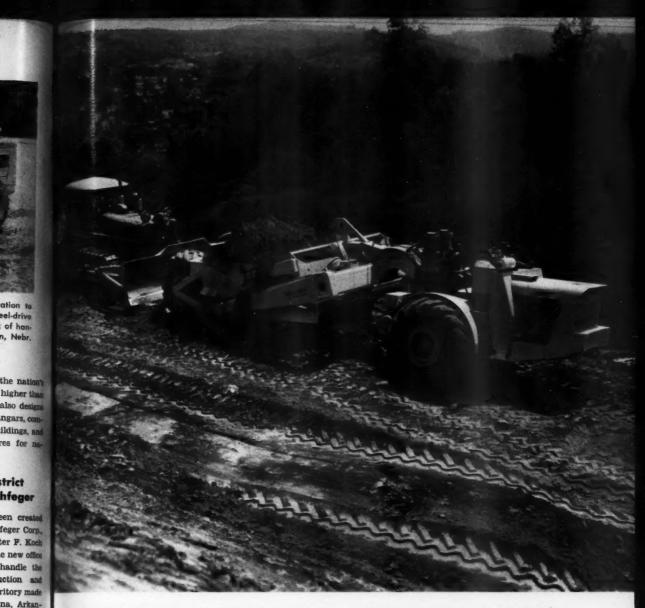
built more than half of the nation television antenna towers higher than 1,000 feet. The company also designs and constructs aircraft hangars, commercial and industrial buildings, and various antenna structures for national defense.

#### New P&H sales district formed by Harnischfeger

■ A sales district has been created in the South by Harnischfeger Corp., Milwaukee, Wis., with Peter F. Koch named as its manager. The new office in Jackson, Miss., will handle the company's P&H construction and mining equipment in a territory made up of Mississippi, Louisiana, Arkansas, and western Tennessee.

The area was formerly part of the Birmingham district. Koch had been sales representative in the Dallas district before his transfer to Jackson.





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#### SUPERIOR DESIGN & PERFORMANCE ... CURTISS-WRIGHT EARTHMOVERS

Curtiss-Wright scrapers not only give you outstanding productive capacity, but also design superiority in every small detail. Ease of control, reduced operator fatigue, improved riding and handling characteristics, and many other less obvious details so important to maximum daily production are given full consideration in every C-W unit . . . insuring superiority in every phase of scraper design, construction and performance.

> SOUTH BEND DIVISION CURTISS-WRIGHT CORPORATION
> SOUTH BEND, INDIANA

Distributed in Canada by Canadian Curtiss-Wright Ltd.

TURN PAGE

#### ESTIMATING EARTHMOVING COSTS

There are several different ways of estimating earthmoving production. There is the wild guess (this has bankrupted many), the educated guess (this depends entirely on the experience of the guesser), and the arithmetical calculation tempered with good judgment. The latter is the most reliable means of job estimating. It consists of analyzing each expent of the job and arriving

The latter is the most reliable means of job estimating. It consists of analyzing each segment of the job and arriving at a total required time per unit to move the total yardage. For example: A job has 3,000,000 cu. yds. of excavation. A particular cut contains 236,000 yds. that can go into one fill with an average haul of 3500 ft. The material is sandy clay with good loading characteristics and a bank weight of 2800 # per yard. The contractor owns four available CW-226's. The haul will be over the new road bed, compacted, well maintained, with a 3% favorable grade, loaded, and an estimated rolling resistance of 70 # per ton. In this type of material, the CW-226 averages a 1.12 bowl factor. Cycle time is figured as follows:

Weight empty	=	8.5	5,500#		=	42.75	
Load 26 x 1.12 x 2800	=	81	1,536#		=	40.75	
Gross Weight	=	167	7.036#		=	83.5	9
<b>Rolling Resistance Empty</b>	= 70	#/ton	× 42.75	tons	=	2,933	#
<b>Grade Resistance Empty</b>						-2,565	#
						5,558	#
Rolling Resistance loaded	= 70	#/ten	x 83.5	tons	=	5,845	#
Grade Assistance loaded	= 20	×3	x 83.5	tons	= -	-5,010	#
					_	835	#
Spot in cut and wait for	pusher	,		.5	mir	1.	
Load				.8	mir	1.	
Accelerate				.3	min		
Travel 3500' 4th gear 30	) mah	3500		1.3	mir		
Dump and turn	, mpn	30 x 8	8		mir		
Accelerate					mir		
Return 3500' 3rd gear 10	6 mph	350	0	2.5	mir		
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Based on a 50 minute hour (83% efficiency) each use will make 8 trips per hour (10.2), hauling 26 x 1.12 or 29.1 pay yards each trip. Hourly production is then 23 pay yards. The CW-226 has an estimated hourly ownership and operating cost of \$25.30 per hour. Cost per yard would be (10.2) or 10.8¢ per yard. With four units being used, each should bear \(\frac{1}{2}\)4 of the cost of the pushers, grader and water truck. Based on a 10 hour shift, the four units would produce 9320 cu. yds. per shift and would work the cut in 25.4 shifts.

Going back to the calculation of cycle time, it should

the four units would produce 9320 cu. yds. per shift and would work the cut in 25.4 shifts.

Going back to the calculation of cycle time, it should be explained that we are figuring on a tightly-run job with top operators on all units. If such is not the case, the use of two push-tractors should be considered. Loading time is based on the size of the hauling units, size of the push-tractor and loading characteristics of the material. The acceleration figure is a case of mathematics and judgment. Rimpull charts for the CW-226 show 4140#in 3rd gear lockup and 2780# in 4th gear lockup. Previous calculations showed that due to grade assistance only 835# is required to move the load. Therefore, there is excess rimpull equal to 39# per gross ton in 3rd gear lockup and 23# per gross ton in 4th gear lockup. This is a very favorable excess and will result in rapid acceleration. One mph equals 88 ft. per minute, therefore, the travel time formula is Distance of 2535# is required to move the load of the conditions. This material will dump quickly and spread evenly for a solid haul road. The acceleration on return is based on the fact that although the unit is empty is has a grade resistance of 2535# in addition to the rolling resistance and therefore will at best be travelling in 3rd gear, convertor stage. Return travel time is figured in the same manner as travel time, loaded. Basing your calculagear, convertor stage. Return travel time is figured in the same manner as travel time, loaded. Basing your calcula-tions on the standard 50 minute hour, you should arrive at an accurate estimate of job time and costs.

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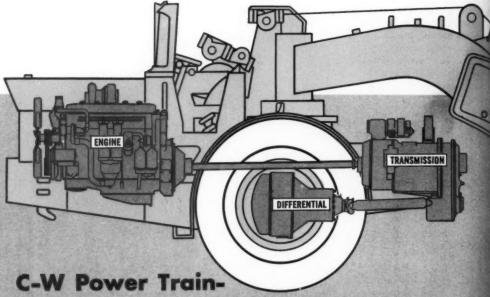
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#### High Performance with Easy Service



From the engine right through the power train, is easily accessible. The engine is easily service, hood raised. With the scraper jack-knifed, the tris as easily worked on as if it were on your all by disconnecting one drive shaft, blocking the tremoving the mounting bolts, the entire wheel assembly can be rolled out. This convenience accessibility assures C-W owners of minimum for any power train servicing job.

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#### film, "Fury of the Winds," on steel construction

An Atlantic hurricane is the villain of Fury of the Winds," a new film on sind-resistant construction available from Bethlehem Steel Co.

The hurricane is followed from the mement of its detection in the Caribbean Sea through its buildup to a destructive force roaring into cities along the Atlantic seaboard.

The 25-minute 16-mm sound and color film shows how, through proper design, construction, and the use of steel, structures can be built to withstand the high winds, flooding rains, and pounding surf that accompany burricanes. Advantages of steel piling, structural shapes, reinforcing bars, and sheet-steel roofing and siding are shown.

Engineering societies, school and college groups, and other interested organizations may borrow a print by writing to Bethlehem Steel Co., Publications Dept., Bethlehem, Pa. The only charge is for postage.

#### Engineer establishes consulting firm

Hans A. Feibusch has formed his own consulting engineering firm at 581 Duncan St., San Francisco. The firm will specialize in consulting for contractors on heavy-construction problems and special equipment, as well as equipment for the manufacturing of prestressed-concrete resolutes.

#### Corps transfers two

8 Col. Harold C. Brown is being assigned as district engineer for the U. S. Army Corps of Engineers at Galreston, Texas, effective this summer. He will succeed Col. Everett A. Hansen, who is being assigned to Japan. Col. Brown is at present technical operations officer, U. S. Army Element, Division of Military Application, Atomic Energy Commission, Washington, D. C.

#### Asphalt Institute news

■ Vaughn Marker, division paving engineer, has been promoted by The Asphalt Institute to managing engineer of the Pacific Coast Division with headquarters at Berkeley, Calif. He succeeds B. A. Vallerga, who is resigning. Marker will direct the activities of an 8-man field engineering staff in seven western states, including Alaska and Hawaii.

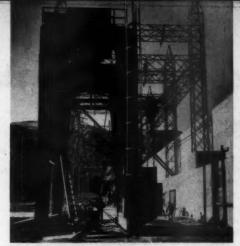
#### U. S. Rubber assigns

Thomas B. Applewhite has been mamed manager of conveyor-products sales for U. S. Rubber Co., New York City. He will have headquarters in the Passale, N. J., plant, which is the manufacturing and sales center for conveyor products.

#### South Bend Division news

The South Bend Division, Curtisswright Corp., South Bend, Ind., has appointed Joseph Albiez general sales manager of construction machinery.

For more facts, circle No. 293→



READY FOR WORK on the draft-tube deck at Priest Rapids Dam on the Columbia River in Washington is one of several gantry cranes that will be used in operating the huge hydroelectric facility. The steel network, background, forms the takeoff structures that will carry the power lines from transformers to transmission lines. Merritt-Chapman & Scott Corp., New York City, is on the project for the Public Utility District of Grant County.

What's proper Victor alloy for your

# HARDFACING

NEEDS? This chart gives you quick answer. Use it to select right rods for prolonging operating life of your equipment. You'll be selecting rods that go on quickly and smoothly, thereby saving labor and downtime. Order from your Victor dealer today.

FREE For more detailed information on how to apply Victor hardfacing alloys to wearing parts, write us Now for your copy of Victor Hardfacing Manual.

#### VICTOR EQUIPMENT COMPANY

Alloy Rod & Metal Division

13808 E. Imperial Highway, Norwalk, California . . . . Wakita, Oklahoma

Profitable dealerships open; inquire now!



#### RODS FOR MANUAL APPLICATION

This Hardfacing Rod	For These Conditions	This Equipment or use	How Applied
VICTORTUBE (Tungsten Carbide)	Severest abrasion	Earth cutting, scraping, drilling tools, rippers, augers, ditchers, excavators, loaders	Gas AC-DC Arc
VICTORTUBE (TC) Bare 30-Down	Severest abrasion; moderate impact	Agricultural and earthworking tools. Suitable for acetylene application	Gas
VICTORTUBE "SPECIAL" (Tungsten Carbide)	Severe abrasion with impact	Oil field tools - rock bits, drag bits, reamers; water well drilling tools	Gas
VICTOR TUNESMOOTH (Tungsten Carbide)	Maximum abrasion	Edged cutting tools - bits, blades, farm tools. Smooth, thin deposits on augers, screw flights, paddles.	Gas AC-DC Arc
VICTORITE	High abrasion: sliding friction	Earthmoving and agricultural tools, brick augers, conveyors, mill guides	Gas AG-DC Arc
TUBE VICTORITE	Abrasion and impact	Farm tools, crushers, grinders, mix- ers, scrapers, fan and screw con- veyors	Gas AC-DC Arc
VICTORITE 1	Heat; abrasion, corrosion	Chemical & food machinery, cement pumps, brick dies, dry bearings & journals, expellers	Gas AC-DC Arc
VICTORITE 6	Heat; impact; corrosion; abrasion	Hot dies, stripper bits, exhaust valves & seats, dry bearings & journals, edging rolls, cams	Gas AC-DC Arc
VICTORITE 12	Heat; corrosion; abrasion; impact	Saw-blade inserts, shaft bearings, hot punches, flapper valves, needle valves	Gas AC-DC Arc
VICTORITE CARBON ARC	High abrasion; sliding friction	Farm tools, earth abrasion. Applied by gas. Deposits are exceptionally smooth.	Carbon Arc Gas
VICTORITE Plow Point Bar	High abrasion; sliding friction	Cast-to-shape, weld-on cutting edge for plow shares, digger teeth, pilot bits	Gas
VICTORALLOY	Severe impact; abrasion	Crusher & dredge parts, tamper feet, bucket teeth. A tough low-cost hard-facing.	Gas AC-DO Arc
VICTORALLOY #1	High abrasion; medium impact	Crushers, bucket lips & teeth, muller tires, dozer blades, dredge pumps	Gas AC-DC Arc
VICTORALLOY "A"	Angular shock; extreme impact	Clutch parts, gears, latches, pins & keepers; build-up for hardfacing	AC-DC Arc enly
VICTORALLOY "B"	Heavy Impact; moderate abrasion	Tractor idiers, sprockets, rolls, crush- er parts, pump casings, impellers, liners	AC-DC Arc only
VICTORALLOY "C"	High abrasion; moderate impact	Cement screws, gudgeons, drag chains, pressure rolls, mixer blades & paddles	AC-DC Arc only
VICTOR MULTI-PASS (for Build-Up)	Severe impact; compression	Drill tools, crawler pads, crushers, mine rails; build-up for hardfacing	AC-DC Arc only
VICTOR NI-Mn (for Build-Up)	Severe impact; compression	Hardmetal underbase for manganese steel parts on crushers, dredges, dip- pers	AC-DC Arc only
VICTOR NI-Mn (for Attachment)	Severe impact	A low-cost "stainless" joining rod for crushers, dippers, crawlers, dredges	AC-DC Arc only

#### WIRES FOR AUTOMATIC & SEMI-AUTOMATIC APPLICATION

This Wire	For These Conditions	This equipment or use
VA O	Severe abrasion; moderate impact	Crushers of all types, tool joints, mullers
VA 1X	Abrasion & compression with impact	Scrapers, bucket teeth, crushers
VA 2X	Severe compression & impact with abrasion	Steel mill rolls, dredge rolls, cable sheaves
VA 3	Severe abrasion & compression with impact	Mill guides, crushers, grinders
VA 4X	Severe impact & compression	Build-up on trunnions, tractor idiers & tracks
VA SX	Severe metal-to-metal impact & abrasien	Shovel rollers, tractor rollers & idlers
VA SX	Severe impact, high temp., dry bearing	Steel mill rolls, clutches, roll necks
VA 7X	Severe impact & compression with abrasion	Build-up on mine car wheels & tractor rollers
VA BX	Earthworking abrasion & impact	Dozer blades, scraper blades, tool joints
VA 10	Extremely severe abrasion; moderate impact	Tool joints, crushers, scrapers, swing hammers
VT 60 (Tungsten Carbide)	Maximum abrasion; earth cutting, scraping	Tool joints, scraper blades, augurs
Ni-Mn (Hadfield)	Wear, all types manganese steels	Build-up manganese steel parts for over- lay or to size

# Mountain climbing

Dozer, crane, truck mixers work on 70 per cent grade; jumbo hangs from cable to place steepest portions

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by RALPH MONSON, field editor

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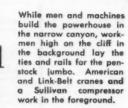
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The rails run down a nearly vertical slope and under a bridge on the access road to Cherry Valley Dam. The power plant is obscured by the bridge and the steep bank.



A transit mixer, using the access-road bridge, chutes concrete into the 5-yard bucket on the jumbo that is raised and lowered by cable as it places concrete.



A big Skagit winch, powered by a Hercules dises, uses 2,400 feet of 1%-inch cable to handle to jumbo on the steep slope. The operator, who cannot see the jumbo much of the time, takes his signals by means of a special RCA phone hookup.



On a section that is not quite as steep, a transit mixer is lowered down a 70 per cent grade beside the penstock excavation. The cable runs from the bumper to a winch atop the mountain,



The transit mixer places concrete in one of the pier footings. The workmen appear to be leaning uphill; actually, they are trying to stand erect on the steep slope.



Pier foundations have been placed here and are ready for the penstock. Down the grade, a Manitowoc 3900 is preparing to place one of the steel penstock sections. Completed sections can be seen in the distance, where the penstock drops over the steep grade.

## pings build power penstock

Building a 6,700-foot penstock for a 2011-foot drop down a mountainside to feed San Francisco's new Cherry power plant was like taking a spread of construction machinery on a seguntain-climbing expedition.

t grades;

ions

On the steepest sections, the equipment literally hung from cables. But most of the 6,700-foot line of steel pipe, which diminishes from 8 to 6 feet in diameter and weighs up to 42 tons, was installed by conventional equipment working on grades as steep as 70 per cent.

The 150,000-kw Cherry plant and is penstock are the most recent additions to San Francisco's huge Hetch-Hetchy water and power development located in the high Sierras in the western part of Yosemite National Park. The plant will have a maximum head of 2,484 feet.

A Cat D8 tractor with Ateco ripper graded the line down the mountainate from the top to the steepest portion just above the powerhouse. The deer pushed the rock down the hill to a road crossing where a shovel and trucks picked it up. Much of this work was on a slope so steep that the Cat had to be helped uphill by a

big Skagit winch that was located at the top.

On the steepest portion, the excavation was done by hand, with the workmen edging their way down the incline foot by foot. Most of the rock they excavated fell down into the powerhouse area. To protect the crews on the powerhouse structure, excavation was carried on during the night when operations on the powerhouse were shut down.

Footings for each of the 320 piers were hacked out of the rock, with huge excavations being made at the points of change of grade or alignment for the necessary concrete anchor blocks.

Transit-mix trucks then made their way over the tortuous access roads and were lowered down the steep grades with the aid of a winch to place the concrete pier and anchor footings.

About two-thirds of the 40-foot pipe sections were placed by a Manitowoc 3900 crane, which used earth and timber ramps to level its tracks when working on grades of up to 70 per cent.

On the very steep lower section,

workmen laid timber ties in the rock and placed rails on them for a big jumbo that handled the concrete and the pipe. A Skagit winch raised and lowered the jumbo on a 2-part 1½inch cable that extended 1,200 feet down the mountainside from the point where the winch was anchored.

The penstock sections were fabricated by the Southwest Welding & Manufacturing Co. plants in Richmond and Alhambra, Calif., and were delivered by truck to the placing jumbo or to the Manitowoc 3900 crane. They were set directly in place without being rehandled.

The plant, called the Cherry Powerhouse, is a portion of the over-all \$54 million Canyon-Cherry power development to be built by the San Francisco Public Utilities Commission. The Canyon plant will be completed in 1962. The Cherry Powerhouse was started in October, 1958, and is scheduled for completion in July. It is being constructed under a \$5,230,175 contract by a joint venture. The participants, all of California, are Gunther & Shirley, Sherman Oaks; E. V. Lane Corp., Palo Alto; Thomas Construction Co., Fresno; and Harms

Bros., Sacramento. Harms and Thomas handled the excavation, the first-stage construction on the powerhouse, and the complete penstock. Gunther & Shirley and Lane completed the powerhouse and installed the equipment.

M. F. "Mickey" Riskin is the project manager for the joint venture. Andrew Cathey served as general superintendent for Harms and Thomas on the penstock and on the first stage of the powerhouse until October, 1959. The work is now being performed by Fred Hunsacker. Carl Fargo is master mechanic and Bill Brown, office manager. J. McCandless is powerhouse general superintendent for the firms of Gunther & Shirley and Lane.

For the city and county of San Francisco Public Utilities Commission, H. E. Lloyd is manager and chief engineer for the Hetch-Hetchy Project; O. L. Moore, construction engineer; W. F. Getts, design engineer; and Harold O. Craig, resident engineer. The project is being designed for the commission by Sverdrup and Parcel's San Francisco office.



A heavy timber ramp, which allows a crane to work on the steep slope, is dragged into place by a D8. In some cases the crane used an earth ramp built by the Cat. At left, a Miller welder.



A section of the steel penstock is picked up by a Manitowoc 3900 crane and swung over the footings. This curved section of the penstock weighs more than 40 tons.



As the crane sets the penstock section, workmen prepare to make the connections. At points of change in grade and alignment, big concrete blocks absorb the thrust forces. This footing contains 835 yards of concrete.



While the transitman shoots the precise alignment for the top and bottom of the pipe, the workmen make adjustments by means of hydraulic jacks. The pipe will be welded to bars in the footing.



Some 320 concrete piers, spaced every 40 feet, cradle the penstock. EFCO forms speed the forming. Pipe will be encased at the change of grade.

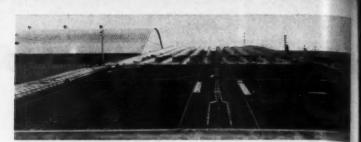


Concrete for the power plant and portions of the penstock is batched in this C. S. Johnson plant into transit mixers. A Hough Payloader feeds aggregates to the plant.

NGINEES



Using a Whiteman double-bladed screed—the same as was used for the deck of the viaduct—a crewman finishes concrete at an intersection near the end of the bridge. The front blade of the screed is vibrated by air-powered vibrators. Bur curing mats, also used to cure the deck, cover concrete in the foreground.



With layers of reinforcing steel and wiring for the electrical heating system in place, the first two spans of the viaduct are ready to receive the lightweight concrete. Heating elements run in groups under wheel areas. Large conduits in median strip contain the feeder lines to the heating elements.

# A prestressed bridge with a

587,000 cubic yards of concrete on schedule...

DEPENDABLE NOBLE BATCHING PLANTS PRODUCE LOWEST COST-PER-YARD CONCR

Large construction jobs demanding an uninterrupted supply of concrete require the extreme dependability and high output of NOBLE batching plants. Typically, on George M. Brewster & Son, Inc., construction of jet airstrips at Griffiss Air Force Base, Rome, New York, twin NOBLE 3B plants batched 419,000 cubic yards at the rate of up to 5,000 yards per day for 2 years without a single shutdown and kept up to 5 dual drum pavers in constant operation. The ease and speed of transport, erection and disassembly of NOBLE 3B and NOBLE-MOBILE Central-Mix plants multiplied the savings for the Brewster company on its widespread operations.

NOBLE-MOBILE Central-Mix concrete plants produce 52,000 cubic yards for building construction at Griffiss Air Force Base; 36,000 cubic struction at Griffiss Air Force Base; 36,000 cubic yards for highway paving at Spring Valley, New Jersey; 80,000 cubic yards for approaches to George Washington Bridge, New York, now being double-decked. Output is 'up to 125 cubic yards per hour. Bin stores 100 tons of aggregates in 3 compartments, 275 barrels of cement in separate compartment. Low profile reduces in separate compartment. Low profile reduces in separate compartment. Low profile reduces conveyor height to top of aggregate bin. 5 cubic yard dry batch holding hopper at end of batch transfer conveyor charges tilting mixer. Adaptable for dry batch production. Complete with wiring, air compressor and automatic controls, compact NOBLE. MOBILE is transported at minimum cost from job to job. mum cost from job to job.



The twin NOBLE 3B plants (above) at Griffiss Air Force Base discharge a total of six 1.37 cubic yard dry batches every 1 minute and 18 seconds. Each plant has 3 batchers only, 1 for cement and 2 for aggregates, which accurately weigh materials simultaneously for a single batch. Two trucks are loaded simultaneously. Installation has two overhead batching silos for 1200 cubic feet of cement, ground storage silo for additional 4600 barrels of cement, 300 tons of overhead and and aggregate storage.



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For more facts, use Request Card at page 18 and circle No. 294

# heated deck

From the bottom of its prestres piles to the top of its aluminum hand. rails, the 1.311-foot viaduct in Abov. deen, S. Dak., is an unusual structure

It is the first major bridge in the country to have an electrical heating system built into the deck. Lightweight concrete is used in the deck as well as in the prestressed-concrete girders. Instead of steel bearing plates, neoprene pads support the girders.

The twenty bents of the bridge are made up of prestressed-concrete niles rising to a poured-in-place cap. This design eliminated the need to excavate in the vicinity of railroad tracks that the viaduct spans. Poor bearing conditions made it necessary to at some of the piles on long steel tubes.

#### Construction goes smoot

Although the design of the bridge is unusual, the building methods were fairly standard. Because of good planning on the part of the contractor, J. H. Beckman Construction Co., Sioux Falls, S. Dak., and because of a practical design by the South Dakota State Highway Commis construction went along smoothly.

The viaduct carries four lanes of traffic on U. S. 281 (Second Street) over the 14 tracks of the main yard of the Chicago, Milwaukee, St. Paul & Pacific Railroad Co. The bridge 1,311 feet long, including approach slabs, and it measures 915 feet between abutments. Its 19 spans range from 29 to 80 feet in length.

Vehicles travel on two 26-foot road ways separated by a 3-foot mall. Pedestrians make use of two 4-foot 10inch walkways. The 6-inch lightweight deck and the walks are su ported by 10 rows of concrete girders.

#### Radiant heat makes bridge safe

The bridge was designed with a heated deck primarily as a safety measure. In snow and freezing weather, the steep 61/2 per cent grade on the bridge would present a serious hazard to motorists. Intersecting streets at each end of the bridge would add to this hazard.

With the electrical system, bridge will be safe for traffic under

a weather conditions. The heating ents are embedded in the concrite beneath the wheel tracks in the traffic lanes. Under each wheel are three 1/4-inch copper tubes aining the heating elements. They are set about 5 inches apart nd 11/4 inches below the surface.

#### Electrical system

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Large electrical conduits, embedded in the raised median, feed the heating elements. Since each span conmins a looped system, the elements do not need to pass through the expansion joints.

Transformer banks at each end of the viaduct supply 440-volt power to the main feeder lines. It is estimated that the system will demand 1,208 amp. The system is arranged so that either half the length of the bridge, or the entire bridge, can be heated at one time. This will conserve electricity when only the north end of the bridge needs de-icing.

From a construction point of view, the electrical system meant the contractor had to make sure that numeres conduits, switch boxes, and heating elements were in place before the concrete was placed. Heating elements were wired to the top layer of reinforcing steel. The heating system, supplied by General Electric, was installed by a subcontractor specializing in electrical work.

#### Neoprene pads

Instead of the customary steel plates, neoprene pads support the ends of the girders. These pads allow for slight movements of expansion and contraction of the deck and do not have a tendency to permanently set, and eventually creep, that characterizes steel bearing plates. The pads also deform slightly under pressure and reduce spalling of concrete from bridge seats. Under the longer girders, a double thickness (about 2 inches) of metallic-reinforced neoprene pad is used.

#### Piles are prestressed

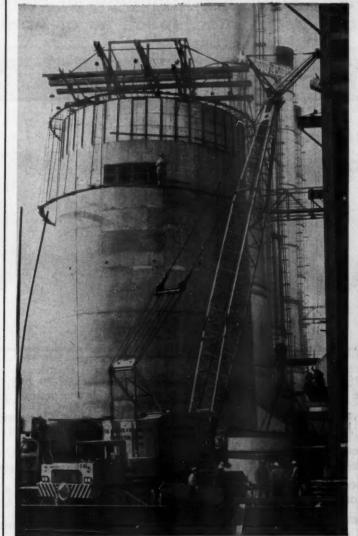
Both the 7.189 linear feet of piling and the 190 girders were produced at the Gage Bros. yard in Sioux Falls, S. Dak. The 18-inch-square piles were prestressed with twenty %-inch strands, each pulled to an initial ten-(Continued on page 62)



This is the circuit-breaker box at the south abutment. Pipes stem out from the box to feed the heater elements in the approach slab. Note the girder resting on a neoprene pad about 1 inch thick.



Crewmen form the deck. Superior adjustable hangers straddling the girders hold double 2×4 wales that support 2×6 joists sagnning girders hold double 2x4 waters that support 2x6 joists spanning between the girders. A plywood decking is nailed to the joists.



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Here is proof-positive of the allaround superiority of American Air Controls. Illustrated at right is the world's largest floating lifting device, an 800-ton capacity air-controlled American Derrick, owned by the J. Ray McDermott Co., Harvey, La. Setting the world's record lift in its builder's trials, this mammoth derrick has since provided safer lifting for scores of difficult jobs such as this one. Here American air controls were relied on to set in place a massive off-shore drilling platform in the Gulf of Mexico. Air controls were employed because their reliability has been proven time after time on the most delicate and costly heavy-duty jobs.

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Special materials handling equipmen

CROSBY-LAUGHLIN DIVISION p forged fitting

For more facts, use Request Card at page 18 and circle No. 295

# Who else...

#### ...but **HOUGH** provides these facts?

This factual data on PAYLOADER four-wheel-drive, rubbertired tractor-shovels in each of 1, 2, 3, and 4 yard sizes points up the advantages of their design, performance and safety features. Comparisons include all competitive units from manufacturers' printed specs as of April 1, 1960.





More Power: H-30 has 17% more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: The H-30 has 4" more clearance and over a foot more reach.

Safety Boom Arms: All moving members pivoted in front of operator. Exclusive on the H-30.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another exclusive.

"Full" Power-Shift Transmission: No manual shift, working to travel range. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Exclusive on the H-30 they permit equal stopping in both forward and reverse. Also sealed against dust and dirt.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-30 exclusive.

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type filter and fine-mesh screen. Another exclusive H-30 protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another exclusive.

Easy Accessibility: No other comparable unit has H-30 accessibility. Dip stick, filler cap, batteries, connections and service points reached from ground level.

More Power: H-70 has more horsepower than the average of 9 competitive gas and diesel units.

More Dumping Clearance: The H-70 has 4" more clearance than average of 9 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-70 exclusive.

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Hydraulic, power-boosted fourwheel-brakes with separate parking brake. Front brakes sealed against dust and dirt.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. A Hough "first".

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-70 exclusive.

Torque-Proportioning Differentials: Transfer up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all service points.

For more facts, circle No. 297

E





More Power: H-90 has 24 more horsepower than the average of 8 competitive diesel models.

More Dumping Clearance: The H-90 has 10" more dearance than average of 8 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-90 exclusive.

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. Improved units have better operating characteristics.

Four-Wheel-Brakes: Power air brakes with big braking area on all four wheels assures easy, safe handling of the H-90 at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-90 exclusive.

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen. Another H-90 exclusive protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-90 exclusive.

Torque-Proportioning Differentials: Transfers up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all points requiring checking and service.

Power-Steering: All "PAYLOADER" four-wheel-drive units have hydraulic power-steering.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

# HOUGH

THE FRANK G. HOUGH CO.
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SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



More Power: H-120 has 38 more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: H-120 has 4" more clearance, 6" more reach than next unit.

Safety Boom Arms: All moving members pivoted in front of operator. Exclusive on H-120.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another exclusive.

"Full" Power-Shift Transmission: Hough-built, fullreversing, constant-mesh, countershaft-type with balanced rotating hydraulic clutches.

Four-Wheel-Brakes: Power air brakes with large braking area assure easy, safe handling at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-120 exclusive.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another exclusive.

Better Balance: Exclusive use of lightweight, extrastrong "T-1" steel for box-section boom arms saves over a ton of "dead-weight" on the load-carrying end.

Better Stability: Counterweighted by approved use of dry ballast material in rear tires. Lower center of gravity, 50% of weight below rear axle. Exclusive.

**Protection:** Special dry-type air cleaner gives 99.8% dust removal efficiency under most adverse conditions. Sealed, pressure-controlled hydraulic system has cartridge oil filters and fine-mesh screens. **Exclusive.** 

Extras: Canopy-type cab with windshield wipers and special lights is standard equipment.

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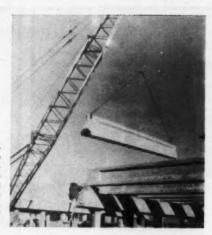
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GINEERS



◀ To get the required bearing on some of the bents, it was necessary to set a pile on top of a 30-inch steel tube that had its top 5 feet filled with concrete. One of these tubes is being driven by the American 599, which uses 90-foot fixed leads.

One of the lightweight concrete girders is swung into place by an American. Girders rest on neoprene pads that are set on grout blocks formed after the cap is placed. The heaviest girder, 80 feet long, weighed only 22 tons.



Do more than 80% of all dam projects in the past 10 years, Gar-Bro's big heavy duty concrete buckets have been used. This is also true about most smaller concrete construction jobs

On more than 80% of all dam projects in the past 10 years, Gar-Bro's big heavy duty concrete buckets have been used. This is also true about most smaller concrete construction jobs where Gar-Bro Concrete Buckets are preferred by contractors. That's why we can say, "The best dam\* concrete and the most concrete passes thru the grout-tight, self-closing, non-jamming double clamshell gates of Gar-Bro Concrete Buckets."

Only Gar-Bro offers you patented double clamshell gates, patented accordion hopper attachments, suspended steel sub-hopper attachments with Elephant Trunk or Steel Drop Chutes. Yes, and only Gar-Bro Buckets are equipped with fittings for easy attachment of these important accessories. No wonder contractors everywhere prefer Gar-Bro Concrete Buckets.

See your local Gar-Bro dealer or write for catalog which illustrates and describes more than 300 items for handling and placing concrete.

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General Offices:

2415 E. Washington Blvd., Los Angeles 21, Calif. \*Concrete for dams, bridges, buildings and all construction projects.

# **GAR-BRO** Buckets

of Concrete Handling Equipment





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(Continued from page 59)

sion of 14,000 pounds. The 14-bed piles, which were used in better at bearing conditions, contained tells %-inch strands pulled to the settension. The solid-core piles, made a standard concrete, varied in lump from 25 to 80 feet.

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#### Girders are lightweight

Lightweight concrete was used in the prestressed girders to reduce the load on the substructure. The Back Hills expanded-shale aggregate reduced the weight considerably. The 80-foot girders, for example, weight only 22 tons compared with a 34-ton weight if regular concrete had been used.

Strands in these long girders was not draped. Each of the 80-foot girders contained thirty-eight 7/16-ind strands stressed to 18,900 pounds per strand.

Most of the girders and piles were shipped to the job by rail. The long members made the 200-mile trip one the highway on pole trailers.

#### Diesel drives piles

Beckman had good results with the Link-Belt diesel pile hammer that knocked the concrete piles into the ground. The hammer was held in foot fixed leads handled by an American 599 crane.

Sufficient bearing in the former lake bottom was sometimes hard to get. Some piles were driven a maximum of 60 feet into the ground R was occasionally necessary to drive the piles below the grade of the cap to get the required bearing. The piles were later built up with poured-in-place concrete.

On four of the bents, it was necessary to drive 30-inch steel tubes in the ground ahead of the pile. The large tubes offered more frictional resistance and gave a higher bearing. At about ground level, the base of the pile was embedded in concrete in the top 5 feet of the steel tube. A plug was welded in the tube five feet below its open top to contain the concrete.

After the piles had been driven to grade, the cap was poured. Great pads were later built on top of the cap to receive the girders.

It was no strain for the American 599 crane to swing the lightweight girders to the pier tops, since the



An aluminum guardrail borders the pedestrian walk of the viaduct. Aluminum bolts holding the base of the petit pass through the concrete walk and fasten against an aluminum plate.

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When the deck was being formed, superior adjustable hangers held suble 2×4 wales that ran along both sies of the girder. The wales superied 2×6 joists that spanned the distance between the girders. A %-neh plywood decking was nailed to the joists.

#### Deck concrete is kept stiff

Black Hills expanded shale was used as the aggregate in the concrete deck. With the largest aggregate size at minus 34 inch, sufficient oment was put in the mix to yield a 4000-pound concrete. The ready-mix concrete was produced by the Gage Bros. plant in Aberdeen.

The superintendent found that the drier he could keep the mix for the deck, the easier it was to get a good mish. In a wet mix, the aggregates sended to float to the surface, making it rough.

Concrete for the two roadways of the deck was placed at the same time. Two Whiteman double-bladed transverse screeds moved back and forth as the front blade was vibrated. Two men, following the screed, worked a plow-handle longitudinal float along the length of the roadway.

#### Plastic-coated burlap for curing

Particularly good results were obtained in curing by covering the concrete with a plastic-coated burlap. The burlap held the moisture, while the plastic on the outside surface prevented evaporation. Called Bur Lene, the product is manufactured by the Max Katz Bag Co. of Indianapolis.

Pinishing touches were put on the viaduct by bordering the walks with aluminum handrails and installing aluminum light posts for the fluorescent lighting. The combination of aluminum and concrete on the exposed parts of the viaduct will mean trouble-free maintenance for years to come. No rusting. No painting.

#### Personnel

For J. H. Beckman Construction Co., Ted Bosselman was general superintendent. The general foreman was Mike McKenny.

The principal designer of the viaduct was Don E. Quinney of the South Dakota highway department. He was assisted in the later stages by Modesto Diaz. The over-all design was supervised by K. R. Scurr, bridge engineer for the highway department. U. R. "Tony" Molseed was the resident engineer on the project, and Frank Bosman was chief inspector. Both worked under the direction of R. W. Owens, district engineer.

THE END

#### **Armco Drainage adds**

\*A \$440,000 addition to the Middletown, Ohio, steel-building manufacturing plant of Armco Drainage & Metal Products, Inc., is planned for completion by early summer. The addition will consist of a new building and new machinery for making newby engineered steel purlins.



Making sure the job is a good one are, left to right, Tony Moiseed, resident engineer for the highway department; Ted Bosselman, general super; Mike McKenny, general foreman; Joe Beckman, president of J. H. Beckman Construction Co.



General Contractor: G. W. Mitchell; Architects: O'Neil, Ford and Associates, Nicanor Salas, project architect; Structural Engineer: W. E. Simpson Company; Steel Fabricator: Alamo Iron Works

# Saucer-shaped roof in San Antonio supported by 200 Bethlehem Strand assemblies

Some Texans call it the Roundhouse...others refer to it as the Sombrero. It's the new Villita Assembly Building of the Public Service Board of San Antonio, and it's believed to be the only building of its kind in the United States. The circular structure will help promote San Antonio as a convention site.

The roof is supported by 200 Bethlehem bethanized strand assemblies. The assemblies consist of pre-stretched strands with swaged fittings, and turnbuckles. The pre-stretching limited the residual constructional stretch, and also raised the

modulus of elasticity.

Bethlehem Strand is ideal for suspended-roofs, and other construction, because it provides maximum strength per unit of weight and diameter. Moreover, the bethanized coating of electrolytic zinc comes in three coating weights, for long-lasting protection against corrosion.

For full details about Bethlehem Strand, get in touch with the nearest Bethlehem sales office, or drop a line to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem wire rope

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 30

#### Names in the News

Harry G. Meadows, president of the Concrete Joint Institute.



#### Concrete-joint group has new address, officers

Harry G. Meadows is the president of the Concrete Joint Institute, formerly known as the Expansion Joint Institute. The institute's new address is 360 N. Michigan Ave., Chicago.

Other officers of the research organization are James C. Whitney, vice president, and Wallace C. Fischer, treasurer.

#### Highway department reorganizes personnel

The Oklahoma State Highway Department has created the new post of administrative assistant for Robert V. Jones, personnel officer. In addition to his former duties, Jones now heads the procurement, office service, and transportation branches.

Dewey Powell has been promoted to assistant to Gomer H. Bittle, chief engineer and assistant director.

An expanded information service division will include press liaison, legislative liaison, and technical branches.

Design engineer Burt McCaleb takes over the roadway-plans and urban-plans branches. State maintenance engineer Earl Anderson assumes the standards and requirements branch, and equipment-engineer, traffic-engineer, special-projects, and civil-defense branches. A survey branch, aerial and grounds, goes to the office of Gaines H. Stout, plans and survey engineer.

#### **Engineering firm elects**

Chas. T. Main, Inc., Boston and Charlotte, N. C., consulting engineers, has elected C. M. Flint, Van Court M. Hare, and Will J. Lessard directors. Flint is presently engaged in the design of several newspaper printing plants and other projects for the graphic arts industry. Hare is working with the company's affiliated partnership, Uhl, Hall & Rich, on the Niagara and St. Lawrence power projects in New York State. Lessard is directing the design of a new plant for Nova Scotia Pulp Ltd. and several projects for the Scott Paper Co.

#### Pennsylvania Highways names two officials

The Pennsylvania Department of Highways has appointed two officials in Washington County. Howard W. Felton is superintendent, and Stephen J. Rohr succeeds him as assistant superintendent.

#### M-C&S names manager

Parker A. Thompson is the new traffic manager for the Construction Department of Merritt-Chapman & Scott Corp., New York City. He was formerly assistant traffic manager.

#### Nevada Highways names

Denton H. Hays has been named administrative officer for the Nevada Department of Highways. Hays will also continue to be coordinator for headquarters offices. W. Otis Wright has been named state highway engineer to succeed Edward L. Pine, who resigned. Appointed to serve with Wright are John Bawden and Reuben Eldredge, in newly created posts as deputy highway engineers. Bawden will be in charge of all headquarter's engineering operations, and Eldredge will supervise field operations.

#### **Walter Kidde appoints**

Charles E. DeAngelis has been appointed assistant to the vice president

of sales of Walter Kidde Constructors, Inc., engineers and builders of New York City and Belleville, N. 1. He has had more than 10 years of perience in the engineering and on struction field, specializing in industrial plants and research laborators.

#### Albert Kahn Associated names chief engineer

R. M. Doering has been appointed chief power-plant engineer for Albert Kahn Associated Architects & Lagineers, Detroit. He succeeds Paul

EUCLID'S GREATER DIMENSION



Model C-6 is powered by a dependable GM 6-71 engine; delivers 211 net h.p. to power train... proven Torquatic Drive provides full-power shift and fast response... almost unbelievable ease of handling... fast-as-a-fox maneuverability... fine visibility... exceptional balance with heavy duty attachments... accessibility for servicing that results in more productive time on the job.

The C-6 has the speed, power and maneuverability to handle every kind of tractor job . . . ripping, dozing, push loading, clearing, towing and other heavy work. Many major components including Torquarito Drive, engine, and planetary drive axle have been job proved in thousands of Euclid earthmovers. Owners say that full-power shift, easy operation and fast response give the C-6 more work-ability than any other crawler in the 200 h.p. class.



Facts and figures on the Model C-6 and Model TC-12 "Eucs" are available from the Euclid dealer in your area . . . get in touch with him soon!



Greater Dimension in power and performance...TC-12 has 2 engines that delive a total of 425 net h.p...independent track drive with separate power train and Torquestic Drive for each track...full-power shift and instantaneous reverso... 8 track rollers...unequalled accessibility for servicing...maneuverability and workability that have set new standards of big tractor performance.



Proven Torquatic Drives deliver a smooth flow of power to each track... with full-power shift there's no delay for clutching and shifting...change direction with a flick of the wrist... 425 total net h.p. is automatically matched to every job requirement... rigid track alignment maintained by independently suspended test frames and fined drives... years-ahead engineering reduces downtime and maintained costs for a better return on investment.

Crawlers without full-power shift are obsolete . . . and cost



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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R. M. Doering, chief power-plant engineer for Albert Kahn Associated Architects & Engineers.

Preuthun, who has retired.

Doering has been an associate of the firm since 1948, and has served as assistant chief of the power division since 1956. He is a registered

professional engineer, and holds certificates from the National Bureau of Engineer Registration and the state boards of Michigan and Indiana.

#### Berger names consultant

Ernest O. Larson, one of the nation's leading reclamation engineers, has joined the consulting engineering firm of Berger Associates, Harrisburg, Pa. Larson will be assigned to various projects in the United States and abroad. He will have head-quarters in the Salt Lake City office.

#### lowa Highway news

The Iowa State Highway Commission has made several personnel changes. Heading the Traffic and Highway Planning Department is Howard E. Gunnerson, who replaces Carl F. Schach, the new engineer of planning.

Stanley L. Ring is now assistant urban engineer; Virgil R. Raymond, assistant auditor; Robert H. Given, district engineer in Council Bluffs; M. Dean Browning, assistant district engineer in charge of construction in Mason City, District 2; William G. Burgan, resident engineer at Red Oak; and John J. Saunders, resident engineer at Council Bluffs. Virgil Butler is now district engineer in the Fairfield District 5 office, and Fay O. Bloomfield has been transferred to the same office as assistant district engineer in charge of construction. Raymond P. Henely is assistant district engineer in charge of secondary roads in District 3, Sloux City.





James C. Reed, left, executive vice president, and Alexander G. Petkus, senior vice president in charge of coordination, engineering, and drafting at Procon, Inc., of Des Plaines, Ill.

#### Procon promotes four

Four executives of Procon, Inc., refinery and chemical-plant construction company of Des Plaines, Ill., have been promoted. James C. Reed has been named executive vice president; Alexander G. Petkus, senior vice president in charge of coordination, engineering, and drafting; James R. Britt, vice president, European operations; and Charles B. Robbins, vice president, staff.

#### NSPE award to Fairman

James F. Fairman has been selected to receive the 1960 National Society of Professional Engineers Award for outstanding service to the engineering profession. Formal presentation of the award will be made at a banquet session of the society's annual meeting to be held in Boston on June 11.

Fairman is senior vice president of Consolidated Edison Co. of New York.

#### CIMA-sponsored bureau elects new chairman

R. E. Bansemer has been elected 1960 chairman of the Continuous Trenching Equipment Bureau sponsored by the Construction Industry Manufacturers Association. Bansemer is general sales manager of The Parsons Co., a division of Koehring Co., Newton, Iowa.

#### **Burns & Roe appoints**

Robert W. Sabel has joined Burns & Roe, Inc., New York City engineers and constructors, as assistant manager of the West Coast office in Santa Monica, Calif.

John B. Kelley has been appointed assistant to the executive vice president. In addition to other assigned duties, he will be active in coordinating foreign operations of the company.

EUCLID Division of General Motors • Cleveland 17, Ohio



# MODERN CRAWLER DESIGN

With over twenty-five years of experience in building heavy earth-moving equipment exclusively, Euclid offers a greater range of types and capacities, a greater background of field experience, and a greater return on your equipment investment.

One example of this greater dimension was the introduction of the Model TC-12 Crawler over 5 years ago. Here was an entirely new concept of tractor design . . . two engines, each driving a separate track through its own Torqmatic Drive . . . unequalled power and work-ability . . . performance that set a new standard of crawler productivity . . . ease of operation and servicing that is still unsurpassed in the industry.

Recently the Model C-6 Euclid tractor went into production after the most comprehensive field trials and proving ground testing ever given any new Euclid model. It, too, has Torqmatic Drive and full-power shift as well as many of the advanced design features of the bigger TC-12. And like the "Twin", the new C-6 utilizes major components that have been job proved in thousands of "Eucs" in construction, mine and quarry service. For instance, the Allison converter and semi-automatic transmission "package" has long since passed the pioneering and development stage . . . it's been used in "Euc" scrapers, rear-dump haulers and other models for years. These two Euclid crawlers provide so much more work-ability that they obsolete tractors without the operating advantages of full-power shift.

←For more facts, circle No. 302

# NOW! INCREASE LEGAL PAI WITH ALL-STEE



This contractor's trailer for tandem-axle tractors holds 20 cubic yards. Other models and sizes available for single axle tractors. Can be equipped with variety of discharge gates for any application.

#### Seven Types of Discharge Gates **Meet All Contractor Hauling Needs**

A complete line of Gar Wood discharge gates tailor Mono-Shell hoppers to your exact job requirements. Each is designed for easy, positive operation, yet is ruggedly built to take the rough abuse of day-in, day-out service.

Air-powered clamshell gate lets operator accurately windrow fill, aggregate or sand. Big twin cylinders close against the load. Optional cab-operated controls are widely used for fast, on-the-go dumping.

Cable-operated door-type gate is ideal for pit-dumping, plant-to-plant use and long-haul operations. Available with optional air trip or air rewind.

Manually-operated gate is ideal for pit-dumping or windrowing. Low in weight ... easily operated.

Transverse spreader gate is air-powered so that heavy, coarse materials like chips and gravel can be laid-down in eight-foot wide layers, to specified depths.

For specialized applications, Gar Wood has engineered rack-and-pinion models, as well as patented butterfly and splitbutterfly gates.

#### ARE CUSTOMIZED FOR YOUR STATE, APPLICATION

For half a century Gar Wood has been the country's leading builder of quality truck equipment. This experience is reflected in Mono-Shell hopper trailer design and versatility.

With standard body models, Gar Wood engineering specialists can customize a hopper trailer to your exact job requirements, and, just as important, to your state road-weight restrictions. You get maximum legal payloads for every application, with minimum maintenance and operating costs.

# WIDE VARIETY OF BODIES

# AND VERSATILITY

Throughout the West, Gar Wood Mono-Throughout the West, Gar Wood Mono-Shell hopper trailers have been increas-ing payloads and profits since 1952. These units have provided an efficient way to handle big loads on long or short hauls. Today, Gar Wood rigs are a com-mon sight on rugged construction jobs as well as over the highways, from the Paci-fic Northwest to Southern California. movable aluminum domes. Loading hatches are fitted with vented, self-locking covers which allow free "breathing" yet keep water out. They offer complete all-weather protection for hauling cement, lime, chemicals and other commodities.

Enclosed Gar Wood Mono-Shell hoppers are also available as semi-trailer units and can be equipped with one, two, or three discharge gates. Semi-trailer models are compartmented both for fast, positive cleanout and for hauling differ-ent materials on the same trip without contamination.



#### **Enclosed Hopper Provides Complete Weather Protection for Free-Flowing Materials** Bulk handling of any free-flowing material is a growing trend around the country. That's because it's faster, less costly and

with bulk hopper delivering you eliminate the time and cost of handling packaged materials through the many steps from source to end use. Hopper trailers let you load, haul and unload in record time...let you schedule more trips per day and bigger payloads per trip.

there's no chance of damage or loss from spillage or contamination.

The models shown above can be equipped with either permanent or re-

#### LOW OPERATING COSTS PROVED ON WEST COAST

#### ASSISTANCE IN ARRANGING "PAY OUT OF PROFITS" **EQUIPMENT FINANCING**

Mono-Shell hopper trailers and gates Mono-Shell hopper trailers and gates are sold and serviced by the nation's largest network of experienced truck equipment specialists. These Gar Wood distributors know your local hauling problems, understand your state axleweight laws. They can show you how Gar Wood hopper trailers will give you bigger payloads, and they will assist you in arranging financing.





the load completely from dirt and water. They provide fast, safe dumping for powdered and granular bulk commodities ... are safe and easy to operate ... virtually maintenance-free. A removable sock assembly is easily attached to protect the load during discharge. Gar Wood's split butterfly gate adds

flexibility to your equipment. It operates either as a solid butterfly for bulk materials, or will handle sand or aggregates up to 11/2 inch diameter.

# AY LOADS 23% OR MORE\* AR WOOD HOPPER TRAILERS

# New Hauling Method Drastically Reduces Operating and Maintenance Costs

WAYNE, MICHIGAN—Gar Wood Industries, world's pioneer truck equipment firm, announces a revolutionary new bulk material hauling method for contractors and contract truckers. Proved for the past eight years, in widely diversified applications throughout the West, the method utilizes hopper trailers designed and built by Gar Wood.

Immediate and most important advantage of the hopper trailer method is the fact that far greater payloads can now be hauled over the nation's roads and highways. Compared to conventional truck-mounted equipment, Mono-Shell hopper trailers let you increase legal payloads 23% or more per trip... even two or three tons more than other trailer methods. Examples of these extra payloads include 28½ tons in Ohio with Gar Wood double-train hopper trailers, and 26 tons in Florida with semi-trailer units.

Payload increases like these result from Gar Wood's exclusive Mono-Shell design which reduces tare weight, and from trailer design and mounting techniques that let Gar Wood distribute more weight over a much greater axle span. Thus, for the first time a manufacturer with nation-wide sales and service facilities is able to offer standard equipment that can be assembled to meet widely varying state axle-weight laws.

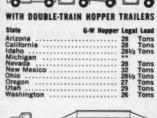
The Gar Wood hopper trailer method offers exceptional benefits to construction, sand and gravel, cement and other industries where bulk hauling is utilized. Increased payloads mean increased profits, and will provide an effective solution to the current cost-profit squeeze. Reduced cycle time and more trips per shift will result from faster loading and discharge operations.

The unique structural design of Gar Wood Mono-Shell units greatly reduces maintenance and repair costs while letting each truck or tractor rig haul more payload per original equipment dollar invested.

Proof of the many money-saving advantages made possible by Gar Wood's hopper trailer method is available through a payload analysis offered by local Gar Wood Truck Equipment Distributors.



#### \*CHECK THE "HOPPER HAULING" PAYLOAD FOR YOUR STATE





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WITH SEMI-TRAILER AND SINGLE-AXLE TRACTOR

State	G-W	Hopper	Legal Lead
Alabama			211/2 Tons
Arkansas			21 Tons
Connecticut			21 Tons
Delaware			21 Tons
Florida		*****	26 Tons
Georgia			221/2 Tons
Kentucky			211/2 Tons
Maine			21 Tons
Maryland			23 Tons
Massachusetts			21 Tons
Mississippi			20 Tons
New Hampshire			24 Tons
New Jersey			22 Tons
New York			23 Tons
North Carolina			23 Tons
Pennsylvania			21 Tons
Rhode Island			21 Tons
South Carolina			21 Tons
Tennessee			20 Tons
Vermont			21 Tons
Virginia			191/2 Tons
West Virginia			20 Tons

\*\*Legal payloads in this state increase in direct ratio to reduction in equipment weight. Mono-Shell hoppers have lowest possible tare weight.

The above figures are based on data provided by the National Highway Users Conference, March, 1960, and are computed with standard heavy-duty tractors.

#### Gar Wood Hopper Train Doubles Hauling Capacity With No Increase in Truck Tractors

This big, rugged double hopper train carries a total of 20.5 cubic yards. Ideally suited for general contracting use with aggregate, sand, fill, and spoil materials. Used on the West Coast to haul and spread hot asphalt mix with only a 5° temperature loss on a fifty-mile haul.

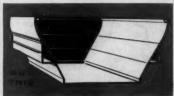
Hopper train shown above is equipped with air-powered clamshell gates for quick dumping at high speeds. Material can be pit-dumped or windrowed to specifications or for stockpiling.

#### Mono-Shell Design Eliminates Dead Weight

Gar Wood has eliminated the truss-frame construction found in other hoppers because trusses add sheer dead weight, with every pound reducing the payload capacity. Instead, the exclusive Mono-Shell design provides all the bridge strength needed for a rugged and sturdy body. Gar Wood has also eliminated cross bracing and interior projections. In a Mono-Shell hopper, every inch is greater payload space!



Conventional design has heavy frame and cross braces that obstruct loading. Shell must still be added to this complex frame.



With Mono-Shell hopper design the contours of the body shell itself form all the required strength and support for a stronger, yet lighter body.

FIND OUT HOW YOU CAN INCREASE YOU SEND FOR FREE CATAL		ND PROFITS.
Name		
Address		10000000000000000000000000000000000000
City	State	
SEND FREE LITERATURE		
SEND FREE PAYLOAD ANALYSIS FOR T	HE FOLLOWING:	Send coupon to:
Type of material hauled		GAR WOOD
Present type of equipment		INDUSTRIES, INC.
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ENGINEERS

#### Avoid legal pitfalls

#### Partly completed job was damaged by fire

THE PROBLEM: A township school building had been partly completed when it was badly damaged by a fire that, allegedly, was caused by a subcontractor's employee. Insurers who had paid losses to the township and the prime contractor sued the subcontractor in the name of the township for reimbursement. Was the subcontractor entitled to show that negligence of the prime contractor had contributed to the fire, as a defense to the claim by the latter's insurer for reimbursement, although

the prime contractor was not a party to the suit?

THE ANSWER: Yes. (Board of Education, Woodbridge Township v. Kane Acoustical Co., 142 Atl. 2d 853, decided by the New Jersey Superior Court, Appellate Division.)

Specially noteworthy are these points decided by the court:

In the absence of agreement to the contrary, the risk of fire loss on a building under construction is presumed to fall upon the builder. It must be rebuilt by him, without additional pay. In this case, the court had not yet been informed as to how the prime contract was worded in this respect.

If the insurance policies were builder's risk policies in the form commonly carried in New Jersey, and if the owner had not yet paid anything and had no pecuniary interest covered by the policy, the builder would be entitled to all of the insurance proceeds. The same would be true if the builder rebuilt before the insurance proceeds were paid over by the insurance companies. On the other hand, circumstances or policy provisions might entitle the owner to some or all of the proceeds.

Where the fire is due to the fault of a third party, suit may be brought in the name of the owner or the builder or both. If the owner sues, he is bound to account to the builder for such part of the proceeds as belong to the latter.



.. and for

#### NEARBY SERVICE on Black & Decker

tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.





#### Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

#### Owner's liability for contractor's neglect

THE PROBLEM: A construction company owned a tract of land and engaged a clearing company to clear the tract preparatory for work on a housing project. The clearing company negligently damaged adjacent lots in buildozing operations. Was the construction company liable for the damages done?

THE ANSWER: Yes. (Samson Construction Co. v. Brusowankin, 147 Atl. 2d 430, decided by the Maryland Court of Appeals.)

The court said that mere employment of an independent contractor will not always relieve the principal from liability for damage done by the contractor. If injury is such as might have been anticipated as a probable consequence of the work let out under instructions by the employer, then the employer, as well as the contractor, may be liable.

#### **Material suppliers**

THE PROBLEM: The lowest bidder on a city highway viaduct construction job sued to enjoin award to a higher bidder on the ground that the latter had failed to comply with a bidding requirement that the subcontractors to be employed be listed. Was it necessary to list fabricators whose duty it was to take pieces of steel—structural shapes—punch reset holes in them, cut them to specified length, and deliver them at the construction site?

THE ANSWER: No. (Duml Co., Inc., v. Knapp, 94 N.W. 2d 615, decided by the Wisconsin Supreme Court.)

The decision was influenced by these facts and considerations:

The general specifications issued

by the Commissioner of Public Wood defined "subcontractor" as "Any parson, persons, firm, company, party ship or corporation, contracting the contractor to perform a sub tial part or all of the contract." A Wisconsin statute defined "sur tractor" as "a person whose relation ship to the principal contractor substantially the same as to a part of the work as the latter's relationship is to the proprietor. A subcontractor takes a distinct part of the work in such a way that he does not contemplate doing merely personal service." The court thought that the two definitions must be read together. The court deemed it clear that one who sells materials delivered at the site of construction is not "a subcontractor under these definition



# TURBOVIBER

Powerful, dependable, high speed, form vibrator for concrete casting yards

10,000 rpm. Exerts over a ton of force.

No motor lubrication. No sliding friction. Minimum maintenance.

Only one rotating assembly. Long life.

Always starts. No vanes to stick.

Drastically reduced operating costs.

Convenient mounting clamps for easy attachment to any form.

For additional information, see your Viber dealer or write Viber Company, 726 South Flower Street, Burbank 21, California.



for more facts, use Request Card at page 18 and circle No. 30

f Public Work " as "Any perpany, parine ntracting was orm a substan contract. ined "subcon. hose relation contractor h as to a part ter's relation or. A sube t part of the at he does not rely personal ught that the read together. lear that one ivered at the not "a sub-

e definitions

though he may contract with contractor in advance of deliv-"The work done by the fabricawe constitutes the preparation of the majerials rather than "a distinct part of the work" and does not shift the phricator from the classification of suplier of materials to that of subentractor. The magnitude of the nee to be paid the fabricator under his particular contract did not afnot the meaning of the term involved. me other courts have considered the definition of "subcontractor" as the term appears in statutes grantis liens and other types of protection to persons dealing with subcontractors. Under some statutes a supdier of materials has been held to a subcontractor, and under others, these decisions involving the use of the term in various statutes ened for different purposes were not rded by the Wisconsin Supreme court as being helpful. No decision living the use of the term in a lar statute or bidding document been cited to the court.

#### unicipal liability

THE PROBLEM: An Ohio city let a tract for improvement of its sewdisposal plant. An employee of a entractor was removing scaffoldwhen he fell into a nearby pit of was injured. Was the city liable ms theory that the city negligently vintained a dangerous condition on il premises?

THE ANSWER: No. (Ratliff v. City of n, 157 N.E. 2d 151, decided by Ohio Court of Common Pleas, it County.)

The court said: First, the city was charging a governmental function maintaining a sewage-disposal at, and was exempt from liability even if negligent. Furthermore, there was no proof that the pit constituted s concealed hazard or that it was not an essential part of the work being carried on by the plaintiff's employer.

The court noted that, as to private contracts, the general rule is that the owner may become liable to the emplayee of an independent contractor if the owner fails to warn of some unusual hazard or danger on the mises not apparent to the conactor's employees.

#### Temporary walkways

or

**NGINEES** 

THE PROBLEM: A contractor enpaged in demolishing a building that abutted upon a street constructed a nventional enclosed walkway. It but covered and ended with a ramp that sloped to the street. There was overhead covering of the ramp nd no handrail. A rubber mat covered the floor of the ramp. A newfallen snow made the ramp slippery. A pedestrian fell and was injured while taking a few steps along the ramp. Was the contractor liable in

THE ANSWER: No. (Ingram v. Libes, 107 S.E. 2d, 920, decided by the North dina Supreme Court.)

The court decided that the conactor's duty to safeguard pedesians was comparable to the duty of

he more facts, use coupon or circle No. 305-

a city to provide reasonably safe sidewalks for pedestrian use. It was not negligence to omit installation of a roof over the ramp and a handrail. The contractor was neither a guarantor nor an insurer of the safety of pedestrians using the boardwalk and ramps. Neither did he warrant that pedestrians using the boardwalk and ramps would be absolutely safe at all times. But he was under a legal duty to exercise ordinary care in the construction and maintenance of the boardwalk and ramps, and to take reasonable precautions to prevent injuries to pedestrians.

One engaged in work on or demol-

ishing buildings abutting on a sidewalk or street must use ordinary care to prevent injury therefrom to travelers on pain of liability for the resulting damage. The person doing such work is sometimes required by statute or ordinance to maintain a covered passageway in front of the building, or to take other specified precautions, for the protection of travelers on the adjacent street or walk, and noncompliance therewith renders such person liable for injuries which occur by reason of such failure. Such a provision is intended to protect persons on the walk from substances falling from the building

while work is in progress there. whether such substances fall directly from the face of the building or are hurled from inside it, at least while work is in progress.

Plaintiff in this case did not allege the violation of any statute or ordinance requiring that the ramp be covered to protect it from snow and ice; neither did she cite any court decision that the ramp must be covered to protect it from snow and ice, nor did the court find one. Defendant was not negligent in not building a cover over the ramp to protect it from snow and ice.

(Continued on next page)





#### whether the job's drilling, sanding, sawing,



#### or any other tool job, you'll find that



## Black & Decker Distributors help cut costs!

Save time whenever you need a portable electric tool . . . simply call your local Black & Decker distributor. He stocks over 125 tools and 3,000 accessories to give you complete selection, fast delivery, tool know-how and personal service. Or, for complete tool information mail coupon at right.

THE BLACK & DECKER MFG. CO., Dept. 1305, Towson 4, Md. Send me information on.....









#### avoid legal pitfalls

#### **Blasting damage**

THE PROBLEM: The owners of a home sued a traprock company, claiming that damage to the building was caused by the company's blasting operations. No rock or debris were cast upon the premises, and the only expert witness stated, on the basis of seismological data, that the blast could not have caused the damage. Was an award of damages proper?

THE ANSWER: Yes. (King v. New Haven Trap Rock Co., 152 Atl. 2d 503, decided by the Connecticut Supreme Court of Errors.)

The court said testimony that a

wall cracked immediately after a blast and that water service was diminished justified a finding that the blast caused the damage, even though there was no supporting expert testimony.

#### Prime's liability

THE PROBLEM: A pedestrian sued a contractor for injuries sustained when he caught his foot in an exposed portion of tracks on a public highway, which was undergoing reconstruction for removal of old tracks and installation of new ones. The accident happened after the contractor had completed reconstruction of the highway but before the subcontractor commenced the finishing operation. Was the prime contractor liable?

THE ANSWER: Yes. (Kiszew v. William P. Bray Co., 141 Atl. 2d 244, decided by the Connecticut Supreme Court of Errors.)

The court rejected the contractor's lawyer's argument that defendant was an independent contractor and could not be held liable for negligence, if there was any, in the performance of its work here because the work had been fully completed, and had been accepted by the firm for which the defendant had contracted to do it, before the plaintiff sustained his injuries.

The difficulty with this claim was that the defendant had not completed the work. The defendant had committed to a subcontractor the portion of the job involving the application of the asphalt surfacing, but the

defendant's obligations flowing from its contract did not end on compistion of the aspect of the work which it chose to perform itself. The defendant owed an obligation to the public and could not relieve itself of liability by delegating to another the performance of a portion of the work. This was particularly true here, where the work necessarily required precautions for the safety of members of the public lawfully using the public highway.

#### Highway worker killed

THE PROBLEM: A highway works was killed when he attempted to avoid an approaching automobile and stepped into the path of a dump truck being operated by a fellow worker. The truck was carrying hat asphalt for repairing highways and was being backed to the asphalt spreader while the motor of the spreader was shut off. The deceased man's estate sued the driver of the dump truck for damages. Did the estate contains a full the suidence justify a damage award?

THE ANSWER: Yes. (King v. Cardin, 319 S.W. 2d 214, decided by the Arkansas Supreme Court.)

The court declared that it was for a jury to decide whether the truck driver, who was directed by another employee, was negligent in backing the truck to the stopped spreader in view of the fact that the crew understood trucks were not to be backed up to the spreader while its motor was off. But the court held that an award of \$5,000 in favor of the deceased man's estate was excessive, in absence of proof that he was conscious after his head was struck by a wheel and that he actually experienced pain and suffering.

#### Contract not usurious

THE PROBLEM: An agreement between a building contractor and a wholesaler provided that the contractor was to pay 12 per cent interest on any payment due, after the Arst 6 month period, on the sum that the wholesaler lent to the contracts The wholesaler was to assist the con tractor in securing materials an subcontracts and any other work that was mutually agreed upon by buth parties, and should receive \$2,400 for each 6-month period that the agree ment was in effect. Was the a ment usurious and voidable on theory that the agreement to \$2,400 semiannually in effect re the interest rate to more than 12 per cent lawful rate?

THE ANSWER: No. (Neeser v. Mortin, 337 Pac. 2d 1065, decided by the Washington Supreme Court.)

The court said that the payment \$2,400 was to be made for service actually performed as specified in a contract in absence of evidence the parties intended to use the provisit to evade the law. The wholesaler who not entitled to be paid for a 6-mon period in which he did not render a services.



# NEW!

for subsurface drainage...

#### TRANSITE UNDERDRAIN PIPE

- · Extremely good weight-strength ratio
- Naturally smooth interior
- Resists corrosion
- · Assures low frictional resistance to flow
- Excellent alignment, tight joints, low material cost for new installation economies

For highways, airports, dams, industrial plant sites—anywhere there's a subsurface drainage job to be done—Johns-Manville Transite® Underdrain Pipe does it effectively and economically.

The plastic coupling used with Transite Underdrain Pipe assures a permanently tight, flexible joint . . . keeps out waterborne silt and maintains permanent pipe alignment. And, because of Transite's long (10 ft. and 13 ft.) lengths, fewer joints are needed in the line.

Made of tough, durable asbestos and cement, Transite Underdrain Pipe won't rust. Its interior is made smooth to stay smooth, assisting the flow of water and reducing the opportunity for solids to find a resting place in the line. As a result, the perforations are able to perform their function of permitting entry of ground water into the line, at a maximum rate, where it can be quickly carried off.

Transite's low material cost, installation and maintenance economies mean important savings from the time it is specified until there is no longer a need for the line. Let us send you, without obligation, our book TR-246A. Write Johns-Manville, Box 14 (CE-5), New York 16, N. Y.

Johns-Manville

owing from POWER B PULL NOW...430HP on comple work which f. The deion to the ve itself of All LW Distributors another the of the work recently received this true here, ly required WESTERN UNION important message: y of memy using the TELEGRAM vay worker

In the date line on domestic relegrance is STANDARD TIME at point of origin. These of receipt is STANDARD TIME at point of origin. ATTN: ALL LW DISTRIBUTORS: NEW 430 HP B TOURNAPULL NOW IN FULL-SCALE LOWEST-NET-COST-PER-YARD OR ANY OTHER BASIS. OFFER TO PRODUCTION. YOU CAN BEAT THEM ALL ON DEMONSTRATE ANYWHERE, IN ANY CONDITIONS, AGAINST ANY OTHER SCRAPER. YOU HAVE A WINNER= LETOURNE AU - WESTINGHOUSE CO PEORIA ILLINOIS=



more power more production more profit

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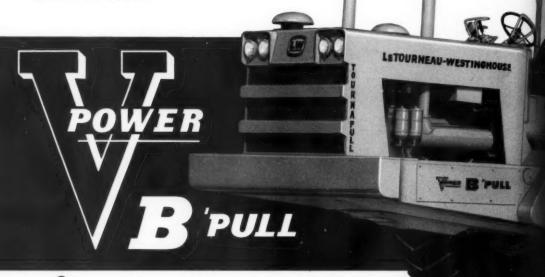
12V-71 GM engine is a 2-cycle, 12-cylinder unit producing 430 horsepower at 2100 rpm, maximum torque of 1210 ft.-lb. at 1200 rpm.

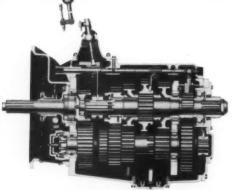
#### **NEW POWER!**

430 HP: to lick ANY job condition

#### **NEW SPEED!**

31.7 MPH + 2-speed steer for more cycles per hour





Easy-shifting Fuller L-1550 with LW High and Law Range is rugged, reliable; offers 10 speeds to 31.7 MPH, self-lubrication, pressure-filtration.

#### NEW CAPACITY!

23 yds struck, for more pay-yardage per shift

#### NEW STRENGTH!

Super-sized final drive for low upkeep, long life

Standard engine on the B Tournapull® is now the General Motors GM 12V-71, producing 430 horsepower at 2100 rpm. That's POWER! Power to pick up heaping payloads fast, no matter how tough the material. Power to get out of the cut fast, no matter how steep the grade. Power to accelerate faster, to chop off minutes from haul-time, and to return at top-rated speed.

#### Best power-to-weight ratio in its class

gvery "horse" on the new V-Power "B" has to power only 320 lb of loaded weight. That compares to an

average of 390 lb per horsepower among other singleengine scrapers in its size-class! You also get the best horsepower-per-struck-yard rating of any single-engine scraper on the market today. The V-Power "B" gives you 18.7 HP per yard, compared to an average of 16.2 among seven other scrapers in its range.

#### Even "hotter" than the V-Power "C"

In the *medium*-sized scraper range, the LW V-Power C Tournapull has earned the reputation as the "hottest" powered scraper of all. V-Power "B" is even "hotter!"

steer

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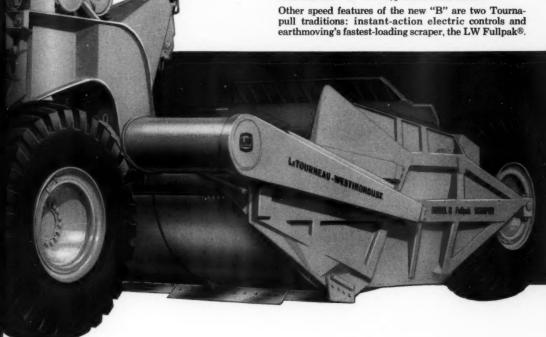
dition

Top speed on the new V-Power B 'Pull is now 31.7 mph. That's 3.6 mph faster — almost 13% — than the average of all other scrapers in the "B's" size-range. And with a 10-speed transmission, your operator works faster on every phase of every cycle. In down-shifting, for instance, instead of having to drop down to a speed of 5 miles slower, he need drop down to a speed only

2 or 2.5 miles slower. And he can "skip-shift" in either direction, anytime without double-clutching.

#### Controlled-steer on the haul; high-speed-steer on the fill

Another new speed feature of the V-Power "B" is a high-inertia steering motor. It has the effect of a two-speed motor, providing slow, controlled, "no-whip" steering at high travel speed on the haul-road, and quick, sharp turning where you need it, on the fill and in the cut. You can complete a 180° turn in 8.6 seconds with the new "B"...45% faster than before!



Struck capacity of the V-Power B 'Pull's low, wide Fullpak scraper is now 23 cubic yards, with a heaped capacity of 29 cubic yards. Redesign of the B Fullpak

has in no way altered the fast-loading, quick-boil features that have made Fullpak the industry's most productive scraper.

H! drive g life

Final-drive gears on the V-Power B 'Pull are now 51/4'' wide ...a full 40% larger than those available until now. The entire tooth surface is now heat-treated, and

the "straight cut" design assures maximum load-bearing strength. No gearing in earthmoving is as simple or as strong! It's built for rock-bottom maintenance.



## **NEW TANDEM OPERATION**

# Add a second scraper in minutes ...move TWO LOADS EVERY TRIP!

With its 430-horsepower engine, the new V-Power B Tournapull lets you pull and operate *TWO* Fullpak scrapers with *one* prime-mover. After installation of the simple plug-in jacks, you can add or take off the second scraper *in minutes*. In materials where you usually add side-boards, you can now DOUBLE YOUR CAPACITY for the cost of a second scraper alone.

You save on operating costs: you're moving two loads with only one operator and with only little more fuel per shift.

You save on maintenance costs: you still have only one engine, one final drive, one transmission to maintain.

You save on pusher costs: you load both scrapers faster than one of the same total capacity (and with the same pusher-power you'd use for either scraper!).

You save on haul-road upkeep: pound for pound, there is less abuse of haul-roads with tandems than with single scrapers.



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Plug-ins connect electricity and air-lines to second scraper. When these are connected and king-bolt inserted into hitch, second scraper is ready for action!



Rugged universal-swivel hitch is pivoted over rear-axle of front scraper. You can perform any maneuver possible with single scraper, with no jack-knifing. U-turns take only 20 to 25% more space than single units.

# V-Power B 'Pulls are AVAILABLE NOW At your LeTourneau-Westinghouse Distributor

Every LW Distributor is now ready to:

- Give you full details on the V-Power "B", biggest profit-builder in earthmoving history.
- 2. Arrange for you to see one of these powerful units at work.
- Take your order for prompt delivery, to your work-area . . . under terms that are as good as, or better, than you can get on any other major piece of earthmoving machinery.

We suggest you see your LW Distributor soon... to see how quickly you can start adding to your profits with the V-Power "B".



#### LETOURNEAU-WESTINGHOUSE COMPANY

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company Where quality is a habit

## Hygt Corp. is new name of Stenberg Mfg. Corp.

e profit

Stenberg Mfg. Corp., Hoosick Falls, N.Y., is now conducting its business ander the name of Flygt Corp.

The change was made largely becase the name Flygt is better known and is more descriptive of the line of destric submersible pumps manufictured by the company. The pumps are used principally in the construction and mining fields and by municipalities and utility companies for drainage and dewatering work.

#### farrell-Cheek Steel marks half century

This month, Farrell-Cheek Steel Co., Sandusky, Ohio, goes into its 3th year of operation. The steel foundry, in addition to tonnage production, also makes wire-rope fittings, cutters and benders, shovel parts, wheels, and rollers.

In recent years, the plant has installed a new X-ray inspection room; modernized the core room with new replacement equipment and engineered planning; improved water and oil quenching for heat treatment; put in new Hi-Cycle grinding installations throughout both cleaning rooms; modernized dust collection throughout the entire plant; added new equipment for the machine shop; and brought in new cost and incentive programs.

## Stone & Webster designs plant for Japanese firm

■ Stone & Webster Engineering Corp., Boston and New York City, will design and assist in the engineering and construction of a second ethylene plant for Mitsubishi Petrochemical Co. Ltd., Yokkaichi, Japan. Detailed engineering will be done in Japan. Materials and equipment will be supplied by Japanese industry, and all construction work will be done by Japanese craftsmen. Completion is scheduled for 1961.

#### **Wheel Trueing treasurer**

■ Wendell E. Lloyd has been appointed treasurer of Wheel Trueing Tool Co., Detroit. The company produces diamond tools for industry and construction, masonry bits, concrete and masonry saws.

#### McKiernan-Terry division assigns sales manager

Nile E. Sweet has been appointed Western sales manager at the Chicago sales office of the Mead-Morrison Division, McKiernan-Terry Corp., Harrison, N. J. Sweet was formerly in charge of sales and promotion of the division's equipment.

#### Plan Hold opens office

Plan Hold Corp., South Gate, Calif., has opened a new warehouse at 303 8. Highland Ave., Aurora, Ill. The new facility will speed up shipments of vertical and roll filing equipment to midwestern and eastern markets.



PRESTRESSING SAVES ON THE COST of this concrete slurry tank at the Midlothian, Texas, cement plant of Texas Industries, Inc. As the tank is wrapped with wire under tension, an external load is applied to counteract the outward forces exerted by the tank's contents. This made it possible for a thinner wall to be used. Engineers of the Preload Co., New York City, specialists in tank design and construction, used a self-propelled wire-winding machine suspended down along the sides of the tank. An initial tension of 150,000 psi was induced in the wire as it was wrapped by drawing it through a die from an original diameter of 0.162 inch to a diameter of 0.142 inch. When the prestressing operation was completed, the wire was covered with a ¾-inch layer of pneumatic morter. The tank rests on a 24-inch slab which is supported on precast-concrete piles.

# NEW DODGE CAB-FORWARDS thrive on tough construction jobs

They're built big to work big, these brawny new Cab-Forwards by Dodge. And, to fit any job, there are models ranging from 15 to 53 thousand pounds G.V.W. Available in tandem and single-rear-axle models. Straight trucks and tractors. Gasoline and Cummins diesel power.

Just 8934 inches from bumper to back of cab, these heavyweights have handling qualities akin to half-tonners. And their engines are positioned for easiest service access through exclusive Servi-Swing fenders.

For greatest hauling efficiency and economy on tough construction jobs, your big buy is Dodge. Available through your local Dodge dealer.



SERVI-SWING FENDERS open out at the pull of a latch to let a man walk right up to the engine for unrestricted servicing. This exclusive Dodge feature spares you the extra cost and bother of a tilf-cab model.



NEW GAS AND DIESEL ENGINES (et you pick the kind of power best suited to your requirements. Gas V-8's from 178 to 228 hp.; economical Cummins diesels from 175 to 220 hp., up to 743-cu.-in. displacement.



TOUGH DODGE FRAMES of heattreated, chrome-manganese steel provide exceptional load support white reducing excess chassis weight for C800 models and up.





A PRODUCT OF CHRYSLER CORPORATION

For more facts, use Request Card at page 18 and circle No. 308



CRAMPED QUARTERS don't keep this international T-340 Four-in-One from doing its share of work on the Compton Avenue relief sewer in St. Louis. The average distance below the surface is 50 feet; diameters run from 10 to 11½

feet. Since the tunnel is too narrow for the tractor to turn, it is hoisted at a vertical shaft, turned, and lowered back to work. Samuel Krause Co., St. Louis, holds the contract for the job.

# What's it GOS

# to slow down and shift?

It could well be costing you important time because of slower job cycles. This time is money you'd be saving with TORQMATIC DRIVES in your equipment—and the proof is on TORQMATIC owners' books.

For these owners have their operators quick-shift at full throttle — never any power interruption. No more pumping of clutches and timing of shifts. What's more, they don't need a booster tractor to get moving in goo or gob. And these owners free their engines from the shock loads and strains which clash-boxes cause. Ending equipment damage saves them about \$1,500 to \$2,000 every time they train a rookie driver. Another \$800 or more goes into the bank each year because they've wiped out engine-disconnect clutch costs.

The reason? TORQMATIC is controlled by a single, small shift lever. There's no leg-tiring disconnect clutch. TORQMATIC automatically adjusts engine power output and speed to load or terrain changes, absorbing harmful and expensive shock loads. It provides a steady, increasing torque to the wheels for a smooth standing start.

The men who are making the extra money—who are underbidding you on your contracts—are probably the men who have switched to Torquatic. They know they'll more than make up the initial extra cost of Torquatic in savings alone. You could, too. So see your equipment dealer or write Allison.

Allison Division of General Motors
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

llison Tongan

TORQMATIC° DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

For more facts, use Request Card at page 16 and circle No. 309

## Dutch engineers have trainee program here

■ Some 44 graduates of engineering schools in The Netherlands are working with the staffs of many firms across the United States as part of a trainee program of the Netherland-America Foundation. The foundation established the program of from one year to 18 months to enable Dutch engineers to get the feel of American customs, practices and standard.

Robert H. Snoeck, civil engines, is the current trainee with the George F. Driscoll Co., New York City. Like all trainees, he is paid a living allowance by the foundation. The company refunds the foundation by making a tax-deductable donation to the foundation's trainee fund. Generally this contribution is five per cent more than the trainee's grant, the extra amount covering administration costs and a health and accident policy that covers him from the time of his departure from Holland until his return after completion of the program.

The program exists under the authorization of the U. S. Department of State as part of the U. S. Exchange Visitor Program.

## Economy Forms subsidiary established in Canada

■ Economy Forms of Canada, Lid., 86 Russett Ave., Oshawa, Ontario, a new subsidiary of Economy Formation. Des Moines, Iowa. The Canadian branch has offices and 5,6% square feet of warehouse space in a newly constructed building. It will distribute EFCO steel forms and accessories for concrete construction.

## I-H plans to purchase U. S. rubber factory

■ International Harvester Co., Chicago, plans to purchase from U. S. Rubber Co. a factory in Fort Wayns, Ind., having more than 500,000 square feet of floor space and a site of about 60 acres. The property adjoins I-H's heavy-duty motor-truck plant.

The company has named Howard M. Henke Southwest region service supervisor of the Construction Equipment Division. He will headquarter in Dallas. J. S. Boyd has been transferred to the Northwest region in the same post as Henke. Robert J. Dyes. Jr., replaces Henke as territory No. 4 service representative of the Southwest region. He will headquarter in Amarillo, Texas. G. S. Hess will now work in the Central region.

#### Carey holds meeting

■ The Philip Carey Mfg. Co., Cincinnati, recently held a national sales conference to inform the sales force on products and sales opportunities. The 10-day meeting was held in Cincinnati's Hotel Terrace Hilton. A week-long session for sales representatives with less than two years field service was followed by a 3-day general session in Carey products for highway and pipeline construction and for the building and manufacturing industries.

# B.F. Goodrich develops 2 new long-wear tire compounds

B.F. Goodrich Cut Protected and Heat Resistant compounds boost tire life, cut costs on heavy construction and earth-moving jobs

THE most costly tire-killers on construction projects are either rock cuts or heat build-up. A B.F.Goodrich research team went to work on the problem, tested and researched various compounds, then developed the first truly Cut Protected and Heat Resistant compounds on the market.

Cut Protected compound gives longer service on jobs where:

Rock cutting, chipping and abrasive wear are severe.

Round-trip hauls are short.

Trucks travel at low speeds.

Heat Resistant compound defies heat build-up on jobs where:

Haul roads are well maintained.

Trucks travel at high speeds.

Cutting and chipping are at a minimum.

Tests show these compounds outperform any others available today. Ask your B.F. Goodrich dealer about them - find out how they can save you money.



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GINEERS

nt. Howard

HERE'S UNRETOUCHED PROOF of ow the new B.F.Goodrich Cut Protected compound wears longer. Both tires were in service at the same time on identical bs under identical conditions. Yet the Cut Protected compound tire above has given approximately 3 times more service than the tire below. Note how little the Cut Protected tread is worn.





SCRAPER HAULS 35 TONS OF CLAY AND SAND to grade new Interstate Highway No. 1202-(1)-9 in Conecuh County, Ala. Equipment works 60 hours a week on stop-and-go runs of a mile or less. Here's a job for the new B.F.Goodrich Cut Protected compound. On long, high-speed hauls, you'd choose the new Heat Resistant compound.

More highway construction news from B.F. Goodrich



RUSHING HIGHWAY CONSTRUCTION near Lackland Field, this giant Killian-House scraper is loaded with 30 tons of earth. Tires are B.F.Goodrich Rock Service Tubeless, designed with massive double-chevron cleats for extra traction, forward or reverse. Rock Service tires are available in the new Cut Protected compound that defies rock cuts and snags, in the new Heat Resistant compound that withstands dangerous heat build-up, or in the Regular compound for normal service.

# How long-wear B.F. Goodrich tires



HYDRAULIC DUMP TRUCK deposits asphalt to pave highway 25 miles southwest of San Antonio. Front tandem tires are B.F.Goodrich Power Express. Rear tandems are Traction Express on 4th retread. B.F.Goodrich FLEX-RITE NYLON cords withstand double the impact of ordinary materials, resist heat blowouts and flex breaks. That's one reason why Traction Express tires can be retreaded again and again.

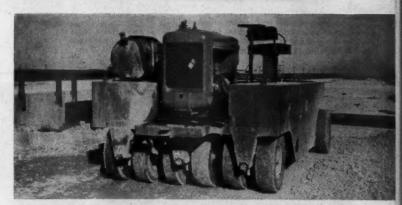


B.F.GOODRICH ON-THE-JOB SERVICE helps contractors cut costs to a minimum. Servicemobile is equipped with all the latest power tools, including hydraulic cranes, bead jacks and pneumatic wrenches. B. F. Goodrich Tire Service Men handle any type tire on any type equipment, work quickly and efficiently. Best of all, B.F. Goodrich Tire Service Men are there when you need them.

6,000-GALLON WATERWAGON rolls on B.F.Goodrich Earth Mover tires. Note the unusual "button" tread. Hundreds of sharp edges bite into the ground to keep the tire from skidding or slipping. Yet the Earth Mover's wide tread keeps the tire on top of soft soil, Work stays on schedule.



HELPING COMPACT EARTH is the job of the 13 B.F.Goodrich smooth-tread tires on this road roller. Other Killian-House equipment includes 30 flat bed and water trucks, 10 scrapers, 15 maintainers, 30 pickups and 30 hydraulic dump trucks—all on B.F.Goodrich tires.



KILLIAN-HOUSE RELIES on B.F.Goodrich truck and trailer tires to move 200 amp. welding machine to equipment repair jobs. Altogether, this contractor uses nearly 800 B.F.Goodrich tires to help speed highway construction in Southwest Texas.





# res keep highway construction on the go

KILIAN-HOUSE, one of the biggest highway and bridge construction companies in Texas, operates out of headquarters in San Antonio—maintains three field offices with 2-way radio hook-up to help service jobs currently worth more than twelve million dollars.

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Good

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Every day a fleet of 143 units goes to work on B.F.Goodrich tires—scrapers on Rock Service tires, dump trucks on the Traction Express, maintainers on Power Grader tires, water trailers on Super Traction tires, pickups on the Power Express—even company cars on B.F.Goodrich Life-Saver Tubeless tires.

Why this vote of confidence in B.F.Goodrich? "Because,"

says General Superintendent Glen Quick, "they are the best tires for the job. For example, we once got only 30,000 to 50,000 miles from truck tires. Costs were enormous. Now B.F. Goodrich Traction Express tires give us 60,000 to 90,000 miles, cutting our costs in half."

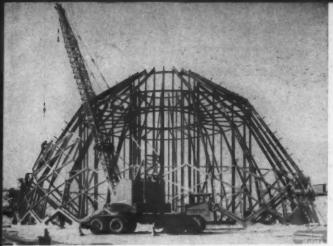
Why not have a talk with your B.F.Goodrich Smileage dealer. He has long-wear tires for every type of off-the-road work and tire service that keeps construction on the go. Look under Tires in the Yellow Pages of your phone book. The B.F.Goodrich Company, Akron 18, Ohio.

SPECIFY B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

OFF-THE-ROAD TIRES BY



For more facts, use Request Card at page 18 and circle No. 310



A support system of pipes and I-beam stringers allows precast-concrete units to be checked by direct measurement from the center of this prolate spheroid. The dome is one of three that will house plant life from three climatic zones. A Koehring 435 is setting a hexagonal unit in a second tier.



Stockpiled haxage units surround forms which they were Because of the concated forming job, so were cast in concept forms made from spatter model. Beside as form is a template acage of reinforcing.

# Precast-concrete web forms unique dome



Modern concrete for Kentucky's Interstate 65 south of Elizabethtown is the pavement that is not flexible

#### ... gives maximum strength with minimum thickness!



Cencrete's beam effect distributes wheel weight over large area of subgrade, reduces apot pressures. Strength of material—not mass carries the load, permitting minimum-thickness pavement.



Fiexible pavement, by its very flexing effect, transmits load forces in almost direct line to subgrade. Excessive concentration of load force can be overcome only by building up pavement thickness.

Interstate System highways like Kentucky's Route 65 pictured here call for a pavement that is solid and unyielding.

Kentucky's highway department chose concrete for this important stretch of Interstate System highway. Necessity for multiple strata construction of 2 to 3 times greater total depth was avoided.

Strength with minimum bulk is possible, of course, because concrete isn't flexible. It supports and spreads the load like a beam. Pressures on the subgrade stay permanently within safe limits.

And concrete's design efficiency assures low maintenance costs in

years ahead. In fact, maintenance costs will be as much as 60% lower than for asphalt. Only concrete enables engineers to design highways to last 50 years and more.

You can see why engineers and taxpayers agree that concrete is the preferred pavement for heavy-duty highways—especially on the new Interstate System.



#### PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

For more facts, use Request Card at page 18 and circle No. 312

Building the world's first open space frame in the shape of a prolat spheroid gets complicated at times and that's an understatement!

There are 275 pieces of precast concrete that must fit together eractly to make the space frame of the beshive-shaped dome. Each of the beshive-shaped dome. Each of the beshaponal, triangular, and diamond shaped precast units must be est with precision and yield a high-quality finish. During erection, the precast units must be supported on a sturdy adjustable falsework built in fit the complex shape of the dome.

These challenges are being met by Hufschmidt Engineering Co. in its part of the work on the Mitchell Park Conservatory in Milwauke, Wis. The key to the economical building of the frame was an efficient six-casting operation and an ingenious falsework design.

In the casting operation, concrete itself proved to be the most practical material for building the forms. Concrete forms, set in the ground, molded the web-shaped precess units.

A system of supporting pipes and I-beam stringers was employed to support the units during erection. The I-beams outlined roughly the shape of the dome; adjustable stell chairs, welded to the I-beams, outlined it precisely.

What will emerge from this com plicated construction project will be three glass-enclosed domes that will give visitors a view of plant life collected from the far corners of the earth. Each dome will display plant life from a different climatic some The temperature and humidity in one dome will be carefully controlled to support the vegetation of tropical rain forests; the climatic cal ditions in the second dome will be suitable for plants of the desert; and the third dome will display plants of the temperate zone. This dome will also have seasonal plant and flower shows.

The \$2.5 million project is being built for the Milwaukee County Park Commission. Donald L. Grieb of Milwaukee is the architect for the unique group of buildings. The structural engineer was the late Charles S. ed hexagond round forms is round forms in any were can of the complement of

dome

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and flower

ENGINEERS

#### Units in three shapes cast at the site in concrete forms

Whitney, also of Milwaukee.

At present, only two of the domes are under construction. Stevens Construction Corp., Milwaukee, is doing the foundation work. Hufschmid: Pagineering Co. of the same city is furnishing and erecting the precast units under a subcontract from Stevens. It is expected that construction of the third dome will start this August.

#### Precast units

The three domes will be practically identical. Each of them, 70 feet high and 140 feet in diameter, will be built of six different sizes of precast units. The units have three basic shapes. The first three rows, or tiers, are roughly hexagonal, with six spokes converging from the corners to a center point. The second two tiers are diamond-shaped, with a single cross strut. The final tier is made up of triangular precast units.

It takes 25 of the units to form a complete ring around the structure. As the precast units get closer to the top, their widths get smaller, but it still takes 25 of them to ring the building. Precast units in any one tier are identical: straight struts fill in the gaps between them.

#### Foundations

The circular foundation wall is built to fit the odd shape of the hexagonal units. The saw-tooth shaped top of the wall is beveled inward to meet the curve of the dome.

This outer foundation wall and an inner wall rest on a 14-inch foundation slab. The most formed by the two walls will be used primarily for utilities

Stevens Construction Corp. formed the outer wall using an 18-foot-long wooden form section. The saw-tooth bridge and the base segments of the wall were formed and placed as a

#### Concrete forms

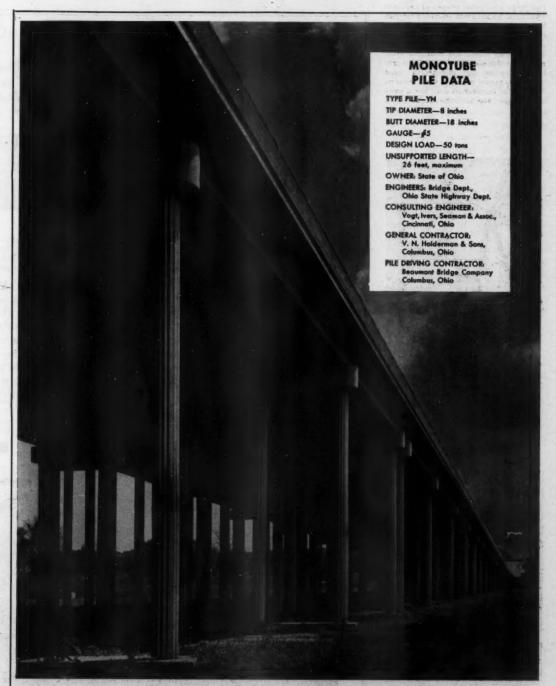
The three different sizes of hexagonal units presented a problem in forming. The shape itself was complex. It was curved in two different directions to fit the shape of the dome. It was not symmetrical, for sides and radial struts were of different lengths and widths. The only uniform dimension was the 8-inch

The use of steel forms was considered, but the complex shape would have made the cost of fabricating the forms very expensive. It was finally decided to build the forms of

(Continued on next page)



An Elliott Hi-Reach makes it easy for a welder to join protruding reinforc-ing bars to gusset plates at the cor-ners of the hexagons. He moves from spot to spot by using electric con-trols on the basket to position the boom of the Hi-Reach. The rig is mounted on an International B-160 truck. A Hobart welder is used to



#### VERSATILITY plus DESIGN ECONOMY

with Monotube piles. When soil conditions in Mansfield, Ohio, prohibited conventional construction in crossing low-lying land, this adaptation of a foundation supported on Monotube steel piles proved

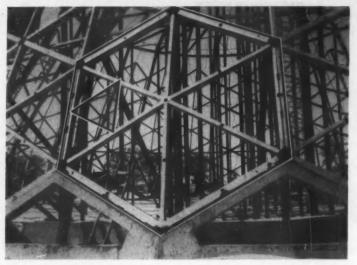
to be an economical solution.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. The Union Metal Manufacturing Co., Canton 5, Ohio—Brampton, Ontario, Canada.

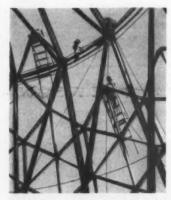
For more facts, use Request Card at page 18 and circle No. 313

UNION METAL

Monotube Foundation Piles



The large triangular shapes of the hexagons will be split into smaller triangles by aluminum settings that will span between the insert plates at the center of the legs making up the triangles. (Note shaded area inside one triangle.) Hexagons for the glass-enclosed dome are held together by reinforcing bars welded to gusset plates at their corners. The circular foundation wall has a sew-tooth-shaped top to fit the precast units.



The first three tiers of hexagonal units have been placed, and crew members are placing the diamond-shaped units. Triangular units completed the dome. Dark members in the foreground are steel pipe columns and I-beams of the falsework.



Jim Quinn, super for Hufschmidt, watches as a precast unit is set in place. A graduate engineer, Jim did all of the complicated layout for the structure. Work on the third dome is expected to start this August.

Here's the way it was done. A specialist was hired to build a plaster model of each of the different shapes—the three sizes of hexagons, the two sizes of diamond-shaped units, and the single triangular shape. The models were built by hand from the dimensions on the plans.

On the job site, the model was secured to a containing form. Triangular box-outs were made on the hexagonal units so that certain side forms of the struts could be made removable. After painting the plaster model with a bond-breaking agent, crews filled the form with concrete to completely enclose the model. Two I-beams were cast in the slab. Using these, a crane lifted and turned

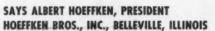
over the big chunk of concrete. The plaster model was then chipped on of the concrete leaving a period form.

#### Reinforcing

The reinforcing cage for a precase unit was built on special template set in a concrete pad alongside the form. Each strut of the unit contained two reinforcing bars wrapped with wire. The reinforcing not only strengthened the unit but served as a welding point during erection: the top bar extended from the concrete at the outer corner and was later welded to a gusset plate.

Concrete for the precast units was mixed on the job in a Rex 1-sert

# "Our ten Ford Tandems are nearly a year old and not one has been off the job for repairs"



"We have been in the grading and paving business since the turn of the century and have used Ford Trucks since the Model T days. Our experience has proved that Fords are economical to operate and the easiest to keep on the job. All repairing is done in our shop so we can tell which trucks are the best for us.

"Our schedules make it impractical to assign a driver to a particular truck and it's not unusual for one unit to have as many as 20 different drivers. This is one of the big reasons we ordered Transmatic Drives on our most recent Ford Tandems. These ten T-800's are nearly a year old and not one has been off the job for repairs.

"Ford's '332' V-8 gives us the power and performance we need for efficient batch concrete hauling. Our Tandems with Dumpcrete bodies carry nearly 6 cu. yd. per trip. And, even in mud up to the axles, they get the loads through. Another thing we like about Ford Trucks is the fact that Ford parts are less costly to buy and much easier to obtain than parts of other well-known truck manufacturers."





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mixer. The mix was then taken to the forms in wheelbarrows and placed by hand shovel. Before concrete was placed, the concrete form as sprayed with a bond-breaking

after the concrete had cured sufficiently, the corner wedges and movshle inner sides were stripped from forms. A crane lifted the precast unit from the forms and placed it in an adjoining stockpile. Six screw-type inserts on the hexagonal units served as the holding points for the lift.

#### Falsework

After considering several different types of falsework, Hufschmidt's ensineers decided that a solid pipe and

I-beam support system would be most practical. The method allowed a maximum of clear room inside the structure. This was desirable, for the position of each unit had to be checked by a direct measurement out from the center of the dome. In a forest of falsework, this measurement would be difficult to get. The cost of the steel was held low by renting the pipes from a scrap yard and using I-beams available from previous jobs. Some 100 tons of steel was necessary for this phase of the work

The falsework was laid out like the lines of a pie cut into 25 pieces. On each of the radial lines were two 8-inch vertical pipes and one diagonal pipe brace. The pipes and diagonal brace were joined at their tops by I-beams that roughly outlined the shape of the dome.

Steel chairs were welded to the flange of the I-beam to meet the exact shape of the dome. The chairs were made to a calculated height above the beam. Two bolts in a plate at the top of the chair allowed for precise adjustment.

Considerable care had to be taken during erection, for each concrete unit had to fit into the dome as precisely as a piece in a jigsaw puzzle. Crews set the units in place one at a time, starting with the bottom tier

and working up. As each unit was placed, its position was checked by measuring its distance out from the center and its height above the floor level. A heavy plumb bob was hung from a known point on the precast unit, and distances were measured from the center to the string, and from the unit down to a line shot with a level.

Using rope slings on a 3-point lift, a 35-ton Koehring Model 435 motor crane set each unit on the falsework. After its position was adjusted on the steel chairs, the unit was welded to adjoining units at the bottom and at one side. Most of the connections were made by welding the protruding rebars to gusset plates.

The contractor bought a very handy piece of equipment for getting a welder to points that were almost inaccessible. Called an Elliott Hi-Reach, it is a small work platform on the end of a long telescoping boom. With the position of the boom controlled from the work platform, the welder can buzz around the prolate spheroid as easily as a bee around a beehive. The boom is mounted on an International B-160 flat-bed truck.

After completion of the space frame, the falsework will be removed and used in the second and, possibly, the third dome. Since some of the pipes are about 65 feet long, it will be no easy job to snake them through the small entrance of the dome.

Under separate contract, the top of the dome will be capped with glass in aluminum settings and the remaining surface enclosed with glass. The glass will be framed in triangular tubular aluminum settings attached to inserts in the precast concrete.

For Hufschmidt Engineering Co., Jim Quinn superintends the job and does the complicated field layout. Ken Kelling is the superintendent for Stevens Construction Corp. Leon G. Grieb is the architect's representative on the job. THE END

#### Swedish contractors study American rigs, methods

■ A group of 38 Swedish contractors recently visited this country to study American equipment and building methods. During the 30-day visit, the contractors were conducted on a plant tour at Athey Products Corp., makers of heavy-duty hauling and loading equipment in Chicago.

#### G-E department names

W. T. Smiley has been named national service manager for General Electric Co. mobile radio at the company's Communication Products Department, Lynchburg, Va. He will coordinate the firm's "authorizedservice-station" program, under which approximately 900 service shops provide technical assistance to G-E 2-way radio customers.

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America's lowest-priced\* pickup truck!



The Falcon Ranchero is priced lower than any pickup in America with comparable standard equipment! And that is in the beginning of your savings. Single-unit construction swes on maintenance . . . it's tighter, quieter, with main underbody structural members zinc-coated against rust and ssion. Front fenders bolt on, cost less to replace. And Ruchero's passenger-car ride and handling ease lessen

#### UP TO 30 MPG!

Totally new for total savings! Ford's new Falcon Ranchero delivers up to 30 miles on a gallon, yet its new 90-hp Six is geared to do a real job! There's lower costs for oil, tires, brakes, replacement parts . . . nearly everything!

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- 1. Up to 30 miles on a single gallon
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- 4. Low loading height
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- 7. Styled to capture admiration

ed on a comparison of latest available manufacturers' augusted retail delivered prices with comparable standard equipment

See the parade of pickups during your FORD DEALER'S TRADING FAIR



RUN

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Some 4½ months ahead of schedule, work is virtually completed on the 3B piers built for the Throgs Neck Bridge between the Bronx and Queens, New York City. Some ten 40 to 50-ton floating derricks handled the job.

# Floating equipment fleet beats schedule for piers



Gardner-Denver RP600 rotary portable compressors at work on sewer job.

#### Work 'em anywhere—in any weather Gardner-Denver rotary portables can take it

You can depend on Gardner-Denver rotary portable compressors to deliver the air you need in any weather—any climate, any altitude. They are ruggedly built, run smoothly, cost little to maintain. Six capacities from 85 to 900 cfm. Write for Bulletin RC-1. See your Gardner-Denver distributor soon.

All-weather operation—assured by efficient cooling system.

No dry starts in cold weather—clutch on RP125 and larger sizes assures full lubrication when compressor is engaged.

Thrifty—"THRIFTMETER" fuel control regulates engine to meet air demands.

Easy to maintain—rotors and blades can be inspected and changed in minutes.



Gardner-Denver RP900 rotaries provide power for 514° drills on Niagara power project.



EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

**GARDNER-DENVER** 

Gerdner-Denver Company, Quincy, Illinois In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Onterio For more facts, use Request Card at page 18 and circle No. 315 A huge fleet of floating equipment, including derricks and a concrete batch plant, helped Merritt-Chapman & Scott Corp., New York, N. Y., complete its \$7 million approach-pier contract for the Throgs Neck Bridge 4½ months ahead of schedule. The new span crosses the East River between the Bronx and Queens in New York City.

The project, which was started in September, 1958, involved the construction of 38 of the 44 approach piers. There are 21 piers along the Bronx approach and 17 along the Queens approach. The remaining piers are being built by the two cable-anchorage contractors—Felhaber and Steers-Snare of New York City.

#### Floating rigs

M-C&S equipped the project with about ten floating derricks, each with a 40 to 50-ton capacity. Some of these were used on the two tower piers under a separate contract. (See "Sinting Caissons for Tower Piers," C&R, December, 1958, page 42.) The contractor used three derricks to drive foundation piles, one to handle the concrete placement, one to drive steel sheeting for the cofferdams, one to extract the sheeting, one to excavate, and the rest to handle the moving and positioning of the forms.

Most of the cofferdams measured 25×75 feet, and the MZ32 and MZ33 sheeting was driven to about minus 40 feet with a McKiernan-Terry 10-B-3 hammer. Each cofferdam was braced by a single ring that varied in size and placement according to the depth of excavation.

After the cofferdam was driven, a was excavated by a clamshell bucket on one of the American or Wiley floating derricks. Steel H-beams were then driven to refusal for the pier foundation. For the Bronx approaches, 73-pound 14-inch H-piles were driven by a McKiernan-Terry S-8 hammer. For the Queens approacheiers, 102-pound 14-inch piles were driven by a McKiernan-Terry S-16 hammer.

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#### Blanket dumped

Before work started on the tremle seal a 2-foot blanket of crushed trap rock was placed inside the cofferdam. This operation was followed by the placement of the concrete tremle seal by the floating batch plant. The depth of the seal varied from 4 to 8 feet for the piers. Before the cofferdam could (Continued on page 86)

CONTRACTORS AND ENGINEERS



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No, it's not child's play, but the fact is you can uncouple Sandvik Coromant Rope-Thread bits and steels by hand! Smooth, shallow-depth, rounded threads with a pitch of just 2 turns per inch prevent binding. You'll have fewer thread failures too, compared with "saw-tooth" thread designs. What's more, only the threads are hardened, so you can re-thread steel sections without heat-treating. And, with faster uncoupling, you'll drill more feet per shift!

Coromant bits and steels have many other advantages, too: Better quality carbide (Sandvik is one of the largest manufacturers of carbide in the world)... better, more rigid steel...superior workmanship... all add up to above average bit and rod life, up to double the footage between sharpenings, and straighter, cleaner holes.

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For more facts, use Request Card at page 18 and circle No. 31

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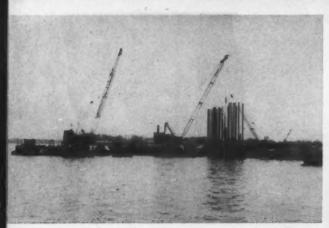
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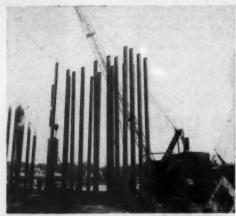
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NGINEEN



An American derrick drives steel H-beam piling for one cofferdam, while another derrick excavates an adjacent cofferdam near the Queens share line. The rigs were well deployed to make the job go fast and put it ahead of schedule.



These 102-pound 14-inch steel H-piles are driven to refusal for one of the piers on the Queens side of the river by an American derrick using a McKiernan-Terry S-10 steam hammer.



Another derrick uses an extractor to sheeting after a pier has been formed to point above water level. The sheeting be used again for another cofferdam.

(Continued from page 84)

be pumped out, a cylinder of tremie concrete had to be tested to determine if the concrete reached a strength of 2,200 psi.

M-C&S used about three 6-inch pumps to unwater the cofferdams before cutting off the steel piling 1 foot above the tremie seal. The contractor then placed concrete for the reinforced 5 to 8-foot distribution block atop the tremie seal. This was followed by placement of concrete for pedestals. This brought the pier about 101/2 feet above water level. After stripping the forms, M-C&S flooded the cofferdam and extracted the sheeting with one of three extractors -a McKiernan-Terry E4, a Vulcan 800A and a Vulcan 1200A. The contractor was equipped with enough sheeting to build 14 cofferdams; all the sheeting had to be used a second time, and a smaller amount a third

Twenty-four of the 38 piers have spandrels atop the pedestal shafts; three are hammerhead-type piers; and the remainder have straight shafts, varying in number from 2 to 5, without spandrels.

#### Steel forms

The contractor used Blaw-Knox adjustable steel forms for the pedestals, shafts, and spandrels. Enough of these were on hand to complete four piers at a time. The adjustable steel forms permitted M-C&S to vary the pedestal width even though the radius of the outside curve remained constant.

The forms were furnished in varying lengths to take care of the many shaft pours that had a slight taper as they rose.

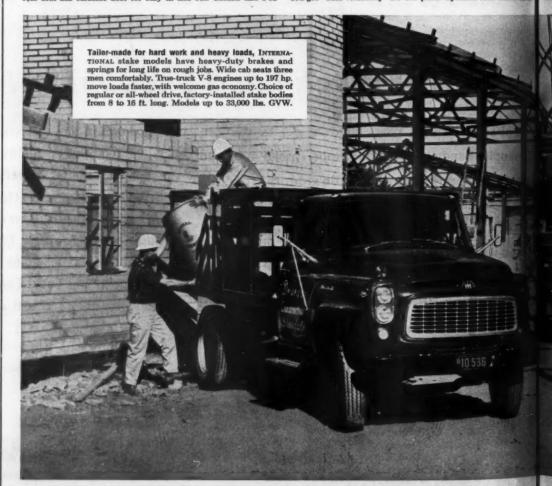
#### Concrete batch plant

The floating concrete batch plant used by M-C&S was the same one that produced the 122,000 cubic yards of concrete for the two tower piers. It consisted of a Johnson aggregate bin and two Ransome 2-yard mixers. Johnson scales and a push-button control panel made the plant automatic, but supplementary controls allowed for manual operation. This 2-way operation insured continuous plant production, even in case of a breakdown in the automatic controls.



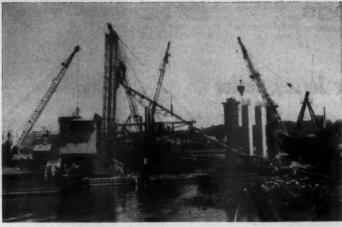
Six-passenger capacity, plus pickup body—the Travelette® takes work crews and their equipment all in one trip. Comfortable, full-width rear seat has curbside door for easy in and out. Chassis and 6-ft.

standard or Bonus-Load pickup body are factory matched and tory mounted. Travelette models handle gross loads up to 8,800 l You get "dual versatility" for one price. Optional four-wheel de





Using a work platform supported by a floating derrick, crews adjust the base of the Blaw-Knox shaft forms for one of the plates.



This floating concrete batch plant, used by M-C&S to produce concrete for the tower piers, under separate contract, is used again for approach-pier work. Concrete is being fed to buckets on the barge in front of the piers being built.



"settest" small leads, big men around the job in an International, pinp. Comfortable cab has 5 ft. wide seat, extra headroom. Choice of standard all-steel bodies (shown) or optional Bonus-Load bodies

up to 8½-ft. long. 266 cu. in. V-8 engine gives outstanding gas mileage. Sweep-Around windshield has no "knee-skinning" doorway projections. Four-wheel drive available, too.



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in any truck you need!

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Next time you're in the market for trucks, take a look at everything International has to offer. See your International Truck Dealer or

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H

Aggregates were supplied to the plant from material barges moored alongside the plant barge. A Wiley derrick, equipped with a 2-yard clamshell bucket, was mounted on the plant barge to charge the aggregate bin. Cement, delivered to the site in enclosed barges, was charged into the cement compartment of the plant by two Fuller-Kinyon air pumps.

Each mixer, after completing its mixing cycle, dumped into a 2-yard receiver that was raised up a 70-foot tower by a single-drum American hoist. The 2-yard hoist bucket was tripped near the top of the tower and the concrete mix emptied into a 2-yard hopper feeding the enclosed transfer chute. This chute, supported by cables and a boom off the tower, was used to charge concrete into the buckets on the deck of the derrick barge.

#### Personne

Merritt-Chapman & Scott's construction operations were under the over-all supervision of Frank R. Creedon, construction manager. Grover C. Denny was the project manager, and Jack Denny, the general superintendent, headed the field staff for M-C&S.

Frank Venesia is the resident engineer for E. Lionel Paulo, New York, N. Y., the consulting engineering firm for the Triboro Bridge and Tunnel Authority.

#### Johns-Manville licenses Flintkote to make pipe

■ Johns-Manville Corp., New York City, has licensed The Flintkote Co., also of New York City, to manufacture high and low-pressure asbestoscement pipe. The pipe has been marketed by J-M under the trade name Transite. Johns-Manville will design and engineer new Flintkote production facilities for this purpose.

Flintkote plans on entering this pipe field with two new plants, one in the East and the other in the West. The asbestos-cement pipe will be sold under the trade name Orangeburg, through Flintkote's Orangeburg Manufacturing Division.

#### Parker-Hannifin moves

■ Parker-Hannifin Corp., Cleveland, has moved its Hackensack, N. J., field sales office to new larger quarters at 19 Railroad Ave., Emerson, N. J. The office serves the metropolitan New York-New Jersey area on all Parker-Hannifin industrial hydraulic and pneumatic products.

#### Air Reduction division opens California plant

Air Reduction Pacific Co., a division of Air Reduction Co., Inc., New York City, has opened a new liquid air separation plant in Richmond, Calif. The \$3 million installation will produce 30 tons per day of liquid oxygen, nitrogen, and argon. The plant is so designed that up to three more comparable producing units can be added in the future.

#### **Distributor Doings**

#### Trades boost sales for Jersey dealer

A 35-year-old distributor organization in Newark, N. J., is constantly on the alert to increase sales volume, while at the same time stressing better and faster sérvice to customers.

This aggressive organization, Johnson & Dealaman, Inc., can proudly boast of servicing its major exclusive manufacturer accounts for an average of 25 years.

Some of these exclusive accounts, and their years of association with Johnson & Dealaman, are: Binghamton Metal Forms, Inc., 25 years; Harnischfeger Corp., 20 years; C. S. Johnson Co., 25 years; Marlow Pump Division of Bell & Gossett, 30 years; N. P. Nelson Iron Works, Inc., 25 years; and T. L. Smith Co., 15 years.

The company operates under the leadership of Michael P. Foggio, president, and Robert Grant, vice president, and has doubled its sales volume since these two men took over control five years ago.

One of their innovations has been the increased acceptance of tradeins to stimulate sales. Prior to 1955, this selling technique was conservatively used. Sometimes, it was responsible for making or breaking a deal. Foggio, who has been with the company for over 25 years, has found that stepping up the practice of accepting trade-ins has been responsible for the increase in sales volume since 1955.

Because of this, the company racked up another good year in 1959. While new purchases were down, used-equipment sales were up. This resulted in a well balanced income statement for the year.

#### Company history

The company was founded by A. T. Dealaman and S. W. Johnson. Johnson died in 1953 and Dealaman in 1955. Upon the latter's death, Foggio, who was working as a junior partner, assumed the presidency of the company. He had joined the company about 20 years before as an accountant, worked his way up to the job of office manager, handled sales, and served as junior partner before becoming president.

In 1955, Robert Grant joined the company as vice president. Grant, a mechanical engineering graduate of Washington State University, joined Harnischfeger Corp. upon graduation. He worked about two years at the Milwaukee plant, was named a sales representative in the Eastern district, and eventually became the company's youngest district manager.

As the manager of the New York district, Grant became closely associated with Johnson & Dealaman, Inc., the exclusive Harnischfeger distributor for all of northern New Jersey. When Poggio became president, Grant joined him as vice president—

Ralph Miele, a mechanic with Johnson & Dealaman for more than 22 years, works on a Joy 125-cfm air compressor at the company's Newark headquarters. The dealer also has a maintenance yard for P&H rigs in Teterboro, N. J.



More proof that ...

AMSCO HELPS YOU MOVE MORE TONS PER DOLLAR

> How a large contractor and a crusher manufacturer have cut downtime and increased service life with AMSCO equipment

# DAILY "TOOTH REPAIR" ELIMINATED BY SWITCHING TO AMSCO 2-PART TEETH

Mount Vernon Contracting Corp. is a large general contractor doing work throughout the middle Atlantic states. Its present contract is for road construction on the Cross Westchester Expressway, linking the New York State and New England Thruways.

The firm's four power shovels and two backhoes on this job are equipped with Amsco dippers or dipper parts and Amsco Simplex\* 2-Part Teeth. Reason: competitive teeth previously used required daily welding build-up to maintain their points. Now, since switching to the Amsco Simplex, teeth are changed only about once a week. And change-over is only a 5-minute job!

With shovels operating 8 hours a day, 5 days a week, this is a mighty important advantage for Mt. Vernon. No wonder they say—"These Simplex teeth really stand up in service, especially in rock, and save us a lot of downtime."

\*Patent No. 2.904.908

#### AMSCO CRUSHER ROLLS HANDLE 50,000 YDS. BETWEEN BUILD-UPS



Carroll Hicken (left) owner of Highway Machinery Company, Waukesha, Wisconsin, is a long-time user of Amsco equipment. His firm designs and manufactures self-

propelled machines for crushing road material, both gravel and stone. All of their machines are rented out or sold to contractors, with maintenance and service handled by Highway Machinery. For years, the company has used Amsco Manganese Steel Crusher Rolls exclusively. Amsco Manganese welding rods and bars are also used for build-up. On a typical rental machine, pictured at right, the Amsco rolls had crushed over 50,000 yds. since their last build-up six months before.

Mr. Hicken says that with Amsco Manganese rods he can multiply the life of a roll by 5 to 10 times. He adds—"They have proven very fine, and we're getting more yardage than with any rods we formerly used."



AMSCO

merican Manganese Steel Division . Chicago Heights, III.

Other plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis
In Canada: Joilette Steel and Manitoba Steel Foundry Divisions
Welding products distributed by Canadian Liquid Air Co., Ltd.

Michael Foggio, right, president of Johnson & Dealaman, Inc., discusses equipment replacements with two of his customers, Al and Peter Luberto from the P&L Truck Crane Service, Inc., East Rutherford, N. J.

with the blessing of Harnischfeger.

Of the 20 employees, seven are full-time mechanics, and each has his own field service truck. All calls come in to the Newark headquarters. Here the work is scheduled and parceled out to the various mechanics for the following day. However, every time a mechanic completes a field call, he telephones headquarters to find out if any emergency calls have

come up. If there is an emergency, the mechanic nearest to the scene is dispatched.

Johnson & Dealaman maintains a spare-parts inventory valued at over \$75,000 to service all but the Harnischfeger account. All parts stocked in the parts room at Newark are inventoried by a Kardex file system.

Because Harnischfeger Corp. has a branch at Teterboro, N. J., about 6 miles away, the Newark distributor has set up a maintenance yard for P&H rigs adjacent to the Teterboro plant.

This closeness between manufacturer and dealer makes the stocking of P&H spare parts at the maintenance yard in Teterboro an easy and smooth operation. Over-the-counter parts requests can be filled 80 per cent of the time, and all other orders can be filled within 24 hours. This is possible because the office is close to Newark Airport, making air freight deliveries feasible.

#### Sales specialist

The company has a specialist in concrete and asphalt plant installations—Al Penn—who has covered the entire territory for the last three years. Penn follows up initial contacts made by the territory salesmen and works with prospective customers to meet any special requirements.

Because of the help given by this specialist to ready-mix outfits, plant and mixer sales have doubled for Johnson & Dealaman in three years.

The company joined the Associated Equipment Distributors about 24 years ago and, according to Foggio, derives many benefits from its membership. These include assistance in promoting better manufacturer-dealer relationships and a constant flow of written material on ideas to increase personnel productivity, efficient administrative functions, sales techniques, and financing.

Last September, Foggio completed a one-year term as president of the New Jersey Equipment Distributors Association. He is also a director of the Irvington State Bank. Grant is currently a vice president of the New Jersey dealer organization. The End

#### U. S. Chamber of Commerce honors seven dealers

Seven equipment distributors have received awards from the U. S. Chamber of Commerce for "outstanding contributions to the construction industry and to the advancement of the free enterprise system." The awards were made at the National Construction Industry Conference in Washington, D. C.

Those honored are L. Miner Doolen, secretary-treasurer of Telford Equipment Co., Lansing, Mich.; H. D. Anderson, retired president of Rish Equipment Co., Bluefield, W. Va.; A. P. Sersanous, president of Loggers & Contractors Machinery Co., Port-

←For more facts, circle No. 318



Highway Machinery Co. portable crusher, equipped with Amsco rolls, at work in a pit. Machine crushes 175 yds. per hour to 34" size.



Amsco 25 x 24 manganese steel crusher rolls, of type used in portable crusher at left.

Welder demonstrating how Amsco Manganese rods are used for build-up on rolls.



**Acme Iron appoints** 

For more facts on Insert, use con

agricultural and industrial fields

dealer spokesmen will cons

suggestions and questions ass

Parker-Hannifin names

Staver Hydraulics Co., 1566 St.

is also franchised to handle O-ri made by another division, Par Seal Co., Culver City, Calif. H. U. Rogness Inc., 1419 11th A S., Minneapolis, will carry Park

industrial hydraulic accumula made by the Parker Hydraulics Di

nifin Co., a division of the corpo

tion in Des Plaines, Ill. The de

vision, Cleveland. Honolulu Iron Works Co., Ho lulu, Hawaii, has been appointed distributor for Crown compressed line components.

Ellis Akin Engineering Co., 2 Cherry, Kansas City, Mo., has b appointed a distributor for Cro compressed-air-line units.

Keller Industrial Products In 217 East Ave., Rochester, N. Y., carry Crown components for e pressed-air service.

Marvin A. Heeren & Co., 1409 1 St., Moline, Ill., will handle Parke hydraulic check valves and genera purpose single-spool lever control valves.

#### **Great Arrow Equipment** replaces Rupp Equipment

Raymond F. Brayer has purchased the Rupp Equipment Corp., Buffale, N. Y., and has changed the name to Great Arrow Equipment Corp. Headquarters will be retained at 85 Great Arrow Ave., Buffalo, The dealer continues to sell and service contractors' and industrial equipment of J. I. Case Co., The Jaeger Machine Co., Baldwin-Lima-Hamilton Corp., Electric Steel Foundry Co., Cleveland Trencher Co., C. S. Johnson Co., etc.

Basyl Tucker has been named sales manager; Martin J. Frost, field sales manager in the Buffalo area; and Donald E. Curtis, division sales m ager in the Rochester, N. Y. office

#### Daybrook names dealer

Leland Equipment Co., 408 N. Ma St., Tulsa, Okla., has been appo a distributor for Daybrook Hydra Division, Young Spring & Wire Co. Bowling Green, Ohio. The dealer carry Power Gates; aluminum steel dump bodies; and telescopic underbody hydraulic hoists. Lel Equipment will serve 58 Oklah counties from its Tulsa office branch at 2812 N. W. 10th St., O homa City; and 23 northeast Tes counties from its branch in Lo view, Texas.

land, Ore.; A. F. Garlinghouse, chairman of the board of Garlinghouse, Fremon & Co., Los Angeles; R. L. Arnold, president of Arnold Machinery Co., Inc., Salt Lake City; J. W. How, general partner of Edward R. Bacon Co., San Francisco: and Paul E. Reinhold, president of the recently dissolved Atlas Equipment Co., Pittsburgh.

Doolen, Anderson, Sersanous, Garlinghouse, and Arnold are all past presidents of the Associated Equipment Distributors. How has been an AED director in Region 11. Reinhold is a past president of the American Road Builders' Association.

**Galion sales meeting** 

Galion Allsteel Body Co., Galion, Ohio, recently held a midwestern sales meeting for distributors that handle its complete line of dump bodies, hoists, dump trailers, and allied truck equipment. A "westernstyle" 1960 sales program, presented to the distributors, contains a complete roundup of advertising and promotional materials timed to match the requirements of specific user markets. A complete advertising service for local distributor programs and national-publication advertising program tell the Galion sales and service story.

The Oliver Corp., Chicago, will hold its annual Dealer Advisory Council meetings during the week of May 16 in Chicago. In previous years these meetings were held at branch offices.

Fourteen dealer representatives, together with the company's management personnel, plant managers, and engineers, will participate in the 4-day discussions on products, policy, and procedures. Representing both

# BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

#### news and notes from the field

#### **Dusting Concrete Floors—Causes and Preventions**

Sample

A

When a concrete floor dusts it is because the wearing surface is weak and traffic has caused it to become powdery. The wearing surface of a concrete floor is comparatively thin in cross section, and its construction must be controlled by certain basic principles. When properly constructed this top surface will resist extremely severe wear and abrasion indefinitely, and dusting will not occur.



UNIFORM DISTRIBUTION of coarse

aggregate particles in correctly built concrete floor. Note that aggregate extends right up to wearing surface.

Sample

Curing and finishing of this slab conformed to the recommendations for proper con-struction that follow. Sample A had a smooth, hard surface which did not dust.



In sample B water was added to increase the slump to 7 inches. It was troweled excessively and not properly cured. Sam-ple B had a soft surface which was easily scratched with a nail as shown in the above illustration.

Since the cement and aggregates for each sample were identical, and each slab subjected to the same weather conditions, this Alpha experiment shows conclusively that the wetter mix, overtroweling and inadequate curing definitely pro-duced the extreme difference in results.



1. Use a relatively dry mix, not over 4-inch slump, on a damp subgrade. For machine floating, water should not exceed 4 gal. per sack of cement; for hand floating not more than 5 gal. per sack of cement. Compact by tamping, rolling or vibrating. If vibration is used, it should be uniformly applied and slump should not exceed one inch.

Strike off and wood float to grade immediately. If necessary, use steel trowel sparingly to remove float marks. Avoid excessive troweling!



seired, an intermediate seired, an intermediate used with great care immediate water sheen leaves the surface.

smooth surface is

intermediate troweling may great care immediately after

6. Cure with waterproof paper, membrane curing compounds, wet burlap or by ponding with water. Start curing as soon as possible.

Do not omit any of the above steps. Often small imperfections in fresh concrete surfaces do not show after the concrete is cured; so excessive troweling is unnecessary.

These recommendations are intended for use in finishing horizontal surfaces of non air-entrained concrete. When airentrained concrete is used, slightly different techniques may be required in steel troweling to prevent pulling or tearing the concrete surface.



WEAK WEARING-SURFACE shows low strength layer of fines. Overtroweling has caused fine particles to rise to the top. Result is excessive shrinkage, cracktop. ing and dusting.

#### What Causes Dusting?

Weak surfaces and dusting generally result from the use of overly wet mixes, excessive troweling and/or inadequate curing which allows rapid evaporation of mixing water at the surface.

To confirm the fact that these practices actually cause dusting, an experienced finisher was called into the laboratory at one of the Alpha plants. He was asked to construct two slabs using the same concrete mix for each, but the slump, finishing and curing of the two slabs were to be drastically different.



Write for a copy of the Alpha Craftsmanship in Concrete Folder: Steel

# PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

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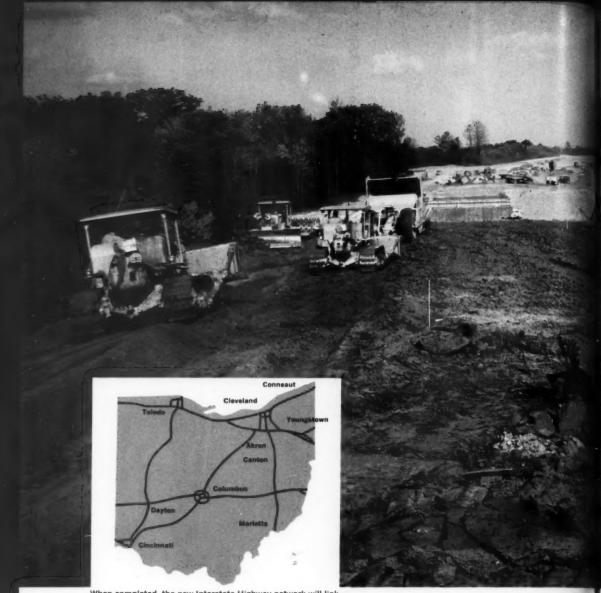
C. F. Replogle Construction Company moved 2,000,000 yds. of earth on its section of the Ohio Freeway, much of it at a rate of 100,000 yds. a day.

On the new Ohio Freeway . . .

In a duel with time and weather, 3 contractors report

GULF MAKES THINGS RUN BETTER!

In 1972, the State of Ohio will be crisscrossed by a coordinated network of seven interstate high-speed freeways. The new \$2.3 billion system will put every town, farm and factory in Ohio just a few hours away from ocean-going shipping at Lake Erie ports. Among the leading contractors working on the 326-mile leg between Cincinnati and Conneaut are the three whose equipment is pictured on these pages.



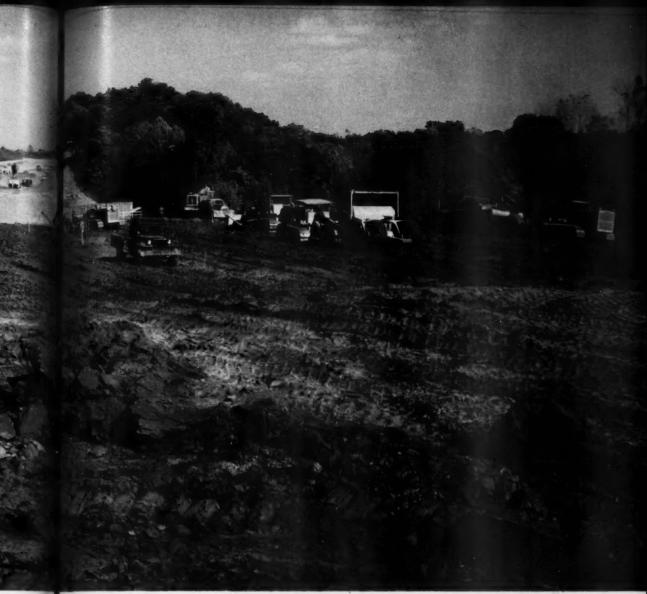
When completed, the new Interstate Highway network will link Ohio's principal towns and cities with each other, with Lake Erie ports, and with the thruway systems of adjoining states.

The land that reaches northeast from Columbus, Ohio, toward Cleveland is deceivingly flat, but its crust of clay and rock and sliding sand can be nerve-wracking to construction crews. Especially in the fall, when weeks of rain pound the mud into glistening muck. Then the dozers bog down, the tracks slip and spin, the wheels stop turning, and the muddy men stand in the slick brown sea and silently shake their heads. But the clock never stops. The days and the weeks tick off, and the completion date gets closer and closer.

Back on schedule after four-month delay ALLEGHENY CONTRACTING INDUSTRIES of Pittsburgh had to suspend operations for four consecutive months

on the Cincinnati to Conneaut Freeway. Storm after storm, followed by biting cold, made the earth unweisable. When work was resumed, completion date for their 4.37 miles of four-lane highway was only six months away. A lot of lost time had to be made up. Alleghen took every precaution against downtime.

Vigilant preventive maintenance, along with closuring Gulf fuels and clean-working Gulf oils as greases, kept equipment humming. Downtime was a most eliminated, and the equipment set excellent peformance records. Engines ran clean with maxima power output. Maintenance costs were held down. As in spite of the weather jinx, Allegheny Contracting Industries got the project back on schedule.



Allegheny Contracting Industries give a large share of credit to Gulf products and service for keeping equipment operating at top performance on a tight schedule.

y. Storm alls Keeping equipment at 95% availability ... every day earth unweitetion date for c. F. REPLOGLE CONSTRUCTION COMPANY, of only six mostle tup. Allegbery and a day. Rolling their big MRS scrapers at more than 95% availability. Pendels test for a 2 mile specific weight. c. F. REPLOGLE CONSTRUCTION COMPANY, of Creleville, Ohio, set an earthmoving pace of 100,000 yards a day. Rolling their big MRS scrapers at more han 95% availability, Replogle took on a 3-mile section of the Cincinnati to Conneaut Freeway near Bellesville-Mansfield, Ohio. Their contract called for moving some an 95% availability, Replogle took on a 3-mile section of the Cincinnati to Conneaut Freeway near Bellesville-Gulf oils and Mansfield, Ohio. Their contract called for moving some vintime was al-2,000,000 yards of earth, paving, and constructing 11 bridges. In spite of foul weather, earth-moving was compitth maximum pleted on schedule. Much of the credit for work progress eld down. And minimum downtime goes to clean-burning Gulf ye Contracting fiels, clean-working Gulf lubricants and on-the-job Gulf service. 2,000,000 yards of earth, paving, and constructing 11 bridges. In spite of foul weather, earth-moving was completed on schedule. Much of the credit for work progress and minimum downtime goes to clean-burning Gulf fuels, clean-working Gulf lubricants and on-the-job Gulf service.

"We know our engines run clean on Gulf diesel fuel," says Charles Thompson, Operations Manager, "because we have no injector trouble. This pays off... keeps our equipment available for work 95% of the time."

Dean Shellhouse, Superintendent of Maintenance, adds, "We use 3,000,000 gallons of Gulf fuel a year, and have no problems with gum, sludge or sulfur deposits. A first line fuel is not expensive when you consider

Replogle also uses Gulf Super Duty Motor Oil, Gulflex A grease, Gulf Multi-Purpose Gear Lubricant, Gulf Harmony\* oil, and Good Gulf\* gasoline.



The 20-hour work day

BRUNS COAL COMPANY, Zanesville, Ohio, tackled the project of clearing, grading, drainage, paving, land-scaping and bridge building on a 6-mile section of the Cincinnati to Conneaut route. The schedule was tight, the going tough. Dozers, scrapers, and graders gouged the earth into road beds. Trucks hauled more than 2,000,000 cubic yards of earth. Equipment ran 20 hours a day, six days a week—building 2½ miles of ramps and interchanges, pouring over 129,000 square yards of 10-inch reinforced concrete pavement.

To keep Bruns equipment on the move, Gulf lived with the job. All Bruns heavy-duty powered machinery operated on clean, top-power Gulf fuels, and functioned smoothly on Gulf oils and greases. Few mechanical delays. Minimum maintenance costs.

Effective preventive maintenance of Bruns equipment included scheduled lubrication with Gulf heavy-duty oils and greases.

Bruns Coal Company executives discuss fuel and lube requirements with Gulf man-on-the-job. Left to right: Dennis Garwood, Chief Engineer; Lloyd Bruns, Vice President and Project Superintendent; Carl Bortles, Survey Chief; Frank Shindeldecker, General Superintendent; and William Stranko, Gulf Sales Representative.



GULF OIL CORPORATION

Dept. DM, Gulf Building Pittsburgh 30, Pa.

Please send copy of "Gulf Contractors' Guide."

Name\_\_\_\_\_\_\_Title

Company\_\_\_\_

Street

City\_\_\_\_\_\_State\_\_\_

On your next project, see how Gulf makes things run better! Call your nearest Gulf office and give us the opportunity to prove it. And return the coupon for your copy of "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.





## A-C dealers attend "Sunshine Promieres"

More than 1,600 earthmoving contractors and Allis-Chalmers construction machinery dealers attended A-C's "Sunshine Premieres" in Califernia and Florida to see the introduction of the new TS-360 motor straper. The first premiere was held in St. Petersburg, Fla., the second at Disneyland, Calif. Six demonstrations were held at each of the sites during 2-week periods.

HD-21 crawler tractors, weighing 19,000 pounds, demonstrated both single and tandem pushing of the 39-cubic-yard TS-360.

#### Kwik-Mix names dealer

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J. D. Evans Equipment Co., Fifth and Omaha Sts., Rapid City, S. Dak., has been appointed a distributor by the Kwik-Mix Co., a division of Koehring Co., Port Washington, Wis. The dealer will handle Kwik-Mix equipment in the entire state.

Western Contractors Supply Co., 4817 Lake St., Melrose Park, Ill., has been appointed by Kwik-Mix to earry Ka-Mo products. The dealer will handle the complete line of Ka-Mo horizontal, vertical, and angular earth-boring equipment in 15 counties in northeastern Illinois, and in Lake and Porter counties in north-

#### **B-L-H** distributor adds

The Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Lima, Ohio, has named Arrow Contractors Equipment Co., 47th and S. Kedzie Ave., Chicago, a distributor of Lima shovels, cranes, draglines, pull-shovels. The dealer will cover three counties in Indiana and 12 in Illinois.

Arrow also distributes Lima Austin-Western crushing, screening, and washing equipment in two Indiana counties and 12 Illinois counties.

Northeastern Equipment Co., Inc., 645 S. Green Road, Cleveland, will distribute the Lima Model D and Super Roadpacker in eight northeastern Ohio counties.

Redwood Equipment Co., Inc., 503 L St., Crescent City, Calif., will carry Lima shovels, cranes, draglines, and pull-shovels, and Roadpackers in four California counties.

#### Shepherd Machinery news

Loyd Somers has rejoined Shepberd Machinery Co., Los Angeles. Be will serve as general manager of the used-machinery department. The new all-hydraulic TS-360 motor scraper goes through its paces at one of Allis-Chalmers' "Sunshine Premieres." More than 1,600 contractors and A-C dealers saw this 30-cubic-yard unit in action at St. Petersburg, Fla., and Disneyland, Calif.

#### **Pacific Mercury news**

Flasher & Barricade Rental Service, 180 Terryville Ave., Bristol, Conn., has been appointed a stocking distributor for flasher warning lights produced by Pacific Mercury Mfg. Corp., Van Nuys, Calif. Flasher & Barricade will offer representative models of PM flasher warning lights on a sales or rental basis.

#### Le Roi names dealer

Stewart Equipment Co., Inc., 27th and Paxton Streets, Harrisburg, Pa., has been appointed a distributor for the S2 line of large stationary air compressors produced by the Le Roi Division, Westinghouse Air Brake Co., Milwaukee. The dealer also carries

Le Roi portable air compressors and Newmatic air tools.

Stewart Equipment also maintains branches at 340 Kidder St., Wilkes-Barre, Pa., and 52nd St. and Woodland Ave., Philadelphia.

#### **Buffalo-Springfield news**

Mitchell Distributing Co., 3535 Hutchinson Ave., Charlotte, N. C., has been appointed a distributor for the entire state by the Buffalo-Springfield Co., division of Koehring Co., Springfield, Ohio. The dealer will sell and service the complete line of Buffalo-Springfield compaction equipment. Mitchell Distributing maintains branches at 5405 Hillsboro Road, Raleigh, and on Sweeten Creek Road, Asheville.



# Lima Roadpacker gets smooth response from 3 Twin Disc Oil-Actuated Clutches

The Lima Roadpacker has dispelled the idea that high-density compaction has to be a snail-paced operation. This agile unit has a compacting speed range of 20 to 95 fpm and shifts instantly for fast travel (up to 30 mph) from job to job or around a job site. It compacts with equal precision in forward or reverse. Six heavy shoes, each producing 2200 vertical vibrations per minute, fill all voids from bottom up without shoving action.

The Roadpacker's mobility is due in large part to three 5" Twin Disc DOC Clutches. The first of these oil-actuated multiple-plate clutches drives the main vibrator pump. Another engages the hydraulic propelling mechanism for compacting range operation. The third is us. 1 in highway travel range.

Built to run in oil, Twin Disc DOC Clutches are compact in size, smooth and trouble-free in performance. They never need adjustment because ram travel increases automatically as the plates wear down.

The oil-actuated clutch used in the Lima Roadpacker is one of a complete line of friction and fluid drives built by Twin Disc. You'll find these performance-proven drive components on virtually every make of construction equipment.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
Hydraulic Division: Rockford, Illinois



Three crews were kept busy on this hotmix paving contract in Adair County, lowa, to make sure that elevations of the subgrade and two layers of crushed stone are within 0.05 foot of planned grade. The crew uses a string line, set from stakes to check elevation of the crown and shoulders following the top lift of crushed stone.

Asphaltic-concrete paving job on interstate route requires

# Precise work to meet tough specifications

From a contractor's point of view, building an asphaltic-concrete highway on Iowa's Interstate System is a tough proposition.

Meeting the tight spex on the base course demands extreme care. Shaving three separate layers of material to within 0.05 foot of grade slows down the generally fast pace of bituminous road building.

The Iowa State Highway Commis-

sion, on the other hand, is convinced that the tight spex are necessary for a good road. They are shooting for a highway with a stable base and a smooth riding surface—one that will stand up for many years under the pounding of heavy trucks and high-speed automobiles.

Although contractor and inspector may not see eye to eye on the necessity for the specifications, one thing is sure: they are building a first-coad.

The highway department has a

1. The completed surfaces of subgrade and the two layers of crushed stone must be within as foot either above or below the plantaged.

2. The subgrade and two courstone must be compacted at within per cent of optimum moisture to be per cent Proctor density.

There are, of course, many operations, but these demand a most attention.

#### Big contracts

These were the spex that had be met recently by four contracts working on separate adjoining outracts to complete 27.441 miles asphalt-surfaced highway. Local mainly in Adair County, the reconstruction will become a part of Interstate Route 80.

One of the contractors doing a good job of keeping up production and still meeting specifications as Concrete Materials & Construction Co. out of Cedar Rapids, Iowa. It has a 6.4-mile slice of the road at a price of \$1.6 million. The contract called for placing about 369,000 tons of crushed-rock base for the road as shoulders and 60,000 tons of asphall for the surfacing.

#### Cross section

Here's what they were builded. Two 1-foot layers of crushed linestone, resting on the compacted fill supported 4½ inches of plant-masphalt. The asphalt was put down in three courses (1¾, 1½, and 1½ inches) to make the two 24-foot roadways.

The 6-foot inside shoulder and the 10 to 12-foot outside shoulder were supported by a 6-inch rolled-sione base. The stone base was surfaced with 1½ inches of asphalt, which was topped with a bituminous armor cost.

#### Tear up old road

One of the first steps in the construction was to rip up what the grading contractor had done in the previous season. Motor graders scarified the top 6 inches of the embankment. This permitted the material to be brought up to 100 per cent density and to be bladed to within 0.05 feet of grade.

Next came the stone. This was produced at a nearby quarry by Schildberg Construction Co., Greenfield, Iowa. The same quarry also produced the crushed stone for two other contractors along the route. Water was added to the finished material in a pugmill arrangement at the quarry to bring it up to about 9 per cent

(Continued on page 18)

Bethlehem dowel units between concrete slabs of new jet runways

- serve as expansion joints
- ease load-transfer between slabs





Bethlehem dowel units act as expansion joints and help transfer loads between slabs. Easily installed, with no delay to fast pouring schedules, these dowel units nest compactly for ease in shipping and storing at the job site.

Under construction at Lemoore, Calif., is a new Naval Air Station, to serve as a master jet base for fleet units in the San Francisco Bay Area. Comprising nearly 31,000 acres, with two 13,500-ftlong paved runways, the facility is expected to be operational in mid-1961.

Bethlehem dowel units (type 4) were installed every 225 ft in the runways to act as expansion joints and to facilitate load transfer between slabs. Runways are 200 ft wide, 12 in. thick. After installation of the dowel units, a jet-fuel-resistant sealer was used as a filler.

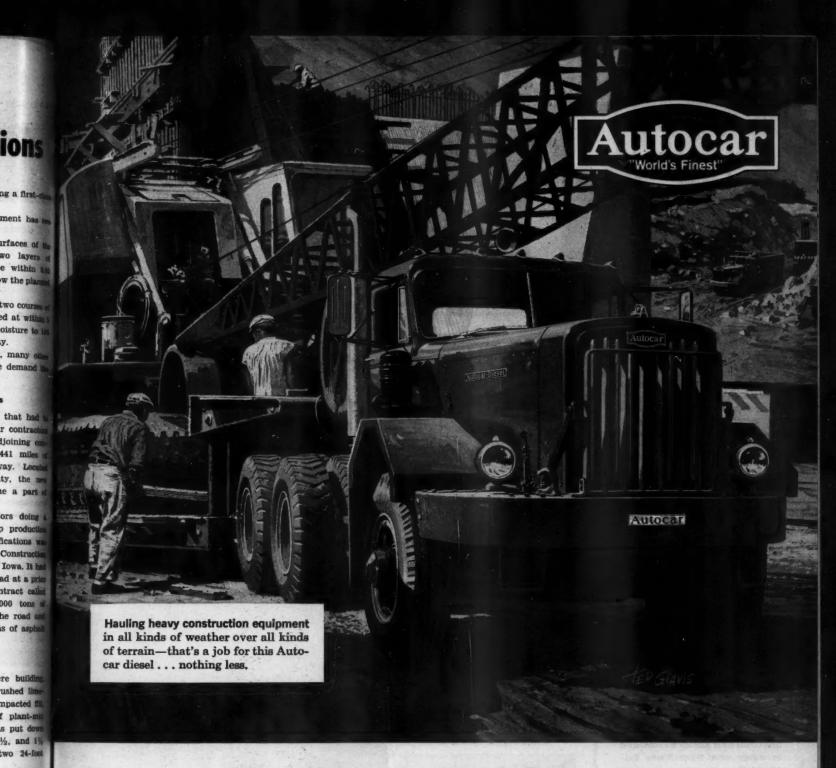
Griffith Company, Los Angeles contractors, paved the airfield, under the direction of the Bureau of Yards and Docks, U. S. Navy.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

> Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL





# "For this we need Autocar nothing less can handle it"

Listen to an experienced contractor. When he says, "This is a job for Autocar," he knows what he's talking about.

He's thinking of the tight schedule he's got to meet . . . the extrasize loads where he must have tremendous power built into a tractor that won't pull apart. He's reminding himself that every Autocar he's ever worked with was custom-engineered to its job-and that every component in it was precision-built to stay on the job. His faith in Autocar grows out of his own personal experience with Autocar at work.

The jobs Autocars perform in construction — hauling big bulldozers, shovels, dumploads over rough terrain-these expose the fact that since nobody builds like Autocar, nothing matches Autocar. That's how this tractor got to be known everywhere as the "World's Finest."

White-Autocar comprehensive service throughout the U.S.A. Don't settle for less than Autocar!



Division of The White Motor Company Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 323

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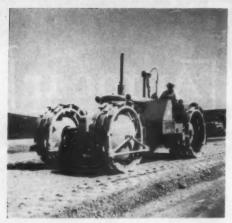
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ENGINEERS



The 6-Inch lifts of minus ¾-inch stone are compacted by this Buffalo-Springfield Kompactor, as well as rubber-tire rollers, to achieve 100 per cent density. In one day, 10,000 tons of rack was placed.



A Cat No. 12 motor grader, using a Preco automatic blade control, brings the base course to within 0.05 foot of true grade while a Huber-Warco 8 to 12-ton tandem handles final rolling.



Excess material cut from the limestone base by the graders is windrowed at the center and removed by this Case Terraload'r, which dumps into a Perfection body on a Ford dump truck.

5

(Continued from page 96)

moisture. This gave near optimum compaction.

Dump trucks hauled the minus ¾-inch material to the job, and it was spread in 6-inch lifts by two Jersey spreaders pushed by Cat D7 tractors. This operation went fast. On one day, the contractor placed over 10,000 tons of rock. As the material was spread, it was compacted to 100 per cent density by rubber-tire rollers and Buffalo-Springfield Kompactors.

#### **Blading stone**

Next came the hard part—shaving the %-inch material to within 0.05 foot of grade. Since the stone base was nearly as hard as concrete, it had to be wetted before it could be bladed down.

The contractor had as many as 10 Cat No. 12 motor graders for the difficult job. Four were equipped with Preco automatic blade controls. For the heavier cutting, a new Cat No. 14 blade was used. The excess material was windrowed at the center and removed by a Case Terraload'r that loaded into a dump truck. Compaction of the final surface was obtained by rolling with Huber-Warco flatwheel rollers.

#### Get out the string

To make sure that the final surface was within 0.05 foot, crews checked at 50-foot stations on the straightaway and at 25-foot stations on the curves. The checking crews stretched a string line over the hubs,



This Cat No. 14 grader makes the 2 to 1 shoulder cut. The man at the front pulls the iron stakes that have been set to give the line of the shoulder.

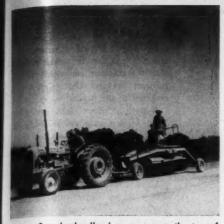


UNIT 1014 truck-mounted %-yd. dragline widening and deepening creek bed in Texas. As a crane the Medel 1014 is rated at 15 tens.



UNIT 1520T trench hos digging ditch for sewer line in California, A ¼-yd. excavater, the 1520T truck come is rated at 20 tens.





After a flat-wheel roller has gone over the top of the limestone base, the surface is swept clean by this Henke sweeper pulled by a Fordson diesel tractor. Priming with asphalt follows.



Once the stone base was brought to grade, surfacing went fast. A Ford T750 tandem-axle truck with Perfection body pulls out of the ramp after picking up a load at the new Cedarapids continuous asphalt plant.



Aggregate is fed by a Link-Belt crane into three of the four cold bins of the Cedarapids plant. Material goes from short variable-speed conveyors under each bin to the conveyors, and then to the inclined belt.

# You are looking at 5 BIG REASONS why UNIT Truck Cranes give you More Earning Power



ig job.

#### 1. POSITIVE CONTROL FRICTIONS.

All operating clutches on a UNIT are disc type. Engaging pressure is uniformly distributed . . . loads are picked up smoothly and evenly without grabbing.



#### 2. DIRECT IN-LINE ENGINE MOUNTING.

Engine, torque converter, and worm drive are all mounted straight-in-line with main machinery. You get ample power for heavy lifts or heaping loads . . . greater operating efficiency.



#### 3. BALANCED WEIGHT DISTRIBUTION.

Load rollers at front and rear of turntable support weight of upper structure... absorb tipping strains. There is no rocking under heavy loads. Upward thrust is absorbed by self-aligning hook shoes. Large turntable gear and roller path have ample strength to accommodate maximum loads at long radii.

#### 4. FULL VISION CAB.

Originated by UNIT and then adopted by others, this cab provides full 360° visibility in all directions to assure efficient and safe operation.



#### 5. INDEPENDENT BOOM HOIST.

Worm type boom hoist permits power raising and controlled lowering of boom at high speeds. Equipped with safety brake, boom hoist is operated by disc clutches and is entirely independent of any other operation.

UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — and (except for Model 360T) are fully convertible. Your UNIT dealer has full information on every model — and on the famous UNIT crawler-mounted machines, too. Call him soon.

HOVELS

HOES
1/2 to 3/4 YDS.

CRANES

5 to 40 TONS

UNIT CRAMMIND VEL CORP.

DRAGLINES

1/2 to 3/4 YDS.

6309 W. Burnham Street Milwaukee 19, Wisconsin and circle No. 324

For more facts, use Request Card at page 18 and circle No. 324

then measured down from the string line at three points. The contractor had as many as three 3-man crews checking the grade before the final inspection was made by the highway department. If the grade was found to be ¾ inch too low, it had to be filled in, rolled down, and rebladed.

This fine-grading was done on both the first and second courses of crushed rock. On the second and final course, the surface was swept with a Henke sweeper and then primed by a Rosco distributor.

#### New plant

Once the base was down and primed, most of the contractor's troubles were over. New plant and lay-down equipment run by hard-working crews rolled out the blacktop at a good clip.

Purchased new for this job was a Cedarapids continuous asphalt plant. Rated at 200 tph, the plant was equipped with all-electric controls. All of the component parts—with the exception of the hot screens—were mounted on wheels so that the plant could be quickly moved from job to job.

The cold feed was regulated from three bins: one bin held a combination of blow sand and coarse sand; the second bin held medium rock; and the third held fine rock and dust. The crushed-stone aggregate was hauled in from the same quarry

(Continued on next page, Col. 4)



A Cedarapids electrically controlled finishing machine, fed by a Ford truck with Perfection body, handles the laydown of the finish course of asphaltic concrete.

NGINEERS

plant setup, the material passed free the cold feed bins, by means of individual regulating conveyors, to an inclined conveyor that carried the

DERRICK BOATS DREDGE SILT and sand from the Ohio River for two high-lift lock chambers, the new Pike Island Locks, six miles above Wheeling, W. Va. Construction of the lock chambers will be carried out inside a 19-acre cellular-steel sheet-pile cofferdam by Dravo Corp., Pittsburgh, for the U. S. Army Corps of Engineers. The locks will serve a new dam, which will replace Lock and Dam 10 at

Steubenville, Ohio, and Lock and Dam 11 at Brilliant, Ohio. The dam, to be built after the locks are completed, will raise the pool level as much as 18 feet between Pike Island and New Cumberland Dam, which Dravo is now constructing at Stratton, Ohio.

material to the dryer. A fleet of about eight new Pord T750 tandem-axle trucks equipped with Perfection bodies hauled from the plant. The trucks hurried the hot-mix to the Cedarapids finishing machine. Following the finishing machine on the compaction was a Huber-Warco tandem roller, a Tampo self-propelled rubber-tire roller. and a finish roller.

#### Long hours

The blacktop crew worked hard, for an unusually wet spring had put the job behind schedule. The men hustled six and seven days a week from 4:30 in the morning until 8:30 at night, to make up for lost time.

Frank Stotts, superintendent for Concrete Materials & Construction Co., put in many long hard days on the project. The same was true for Dick Driskell, chief inspector for the highway department. The resident engineer for the highway department was Lowell E. Richardson. THE Exe

#### A-C appoints manager

D. B. Scott has been appointed successor to F. C. Ludington as manager of the control department of Allis-Chalmers Mfg. Co., Milwaukee Until he retires on July 1. Ludington will serve as a consultant. Robert C. Brown, assistant manager of the rec tifier section, becomes manager of the section, replacing Scott.

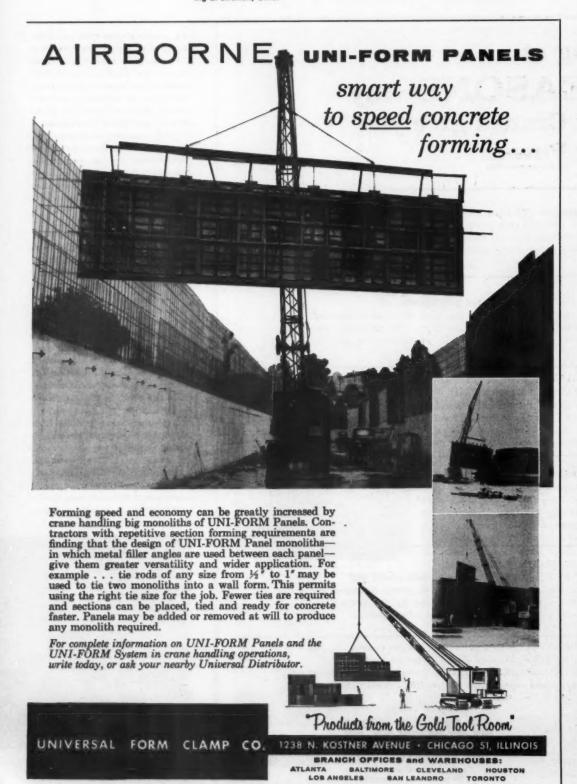
A-C has appointed Pioneer I neering Division, Poor & Co., N neapolis, a sales agent in the U. & and Canada for Hydrocone crust in sizes of 51 inches and smaller. Under the new agreement. Pioneer dis tributors may sell Hydrocone crush ers for all portable or semi-portable plants.

#### L. B. Foster opens office

L. B. Foster Co., Pittsburgh, ha established a new office, yard, and warehouse at 4050 W. 119th St. Cleveland. The branch will maintain large stocks of steel-sheet piling, rail and track accessories, H-bearing pile, foundation pipe for piling, crane rail, valves, and fittings. The office also has a complete inventory of structural and tested pressure pipe and will specialize in extra-heavy and large-diameter pipe.

#### Unit Crane buys Bay City

■ Unit Crane & Shovel Corp., Milwaukee, has purchased all stockholdings of Bay City Shovels, Inc., Bay City, Mich. The acquired company. which will function as a wholly owned subsidiary of Unit Crane, will be under the direction of S. S. Sherman, president; David Emerman, secretarytreasurer; and vice presidents C. L. Nelson, A. R. Corbett, A. B. Py, W. P. Matschke, and E. F. Rueter.



For more facts, use Request Card at page 18 and circle No. 325

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GINEERS

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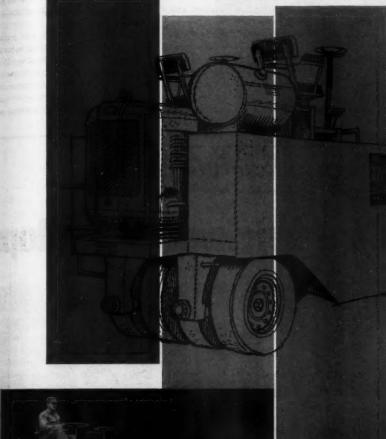












The BMCO 18T9; 18 ton, 9-wheeled self-propelled roller; is the only roller in its price class delivering a full 92 psi ground contact area — 8 to 10% more than any comparable roller. Capable of maintaining a ballast weight of 36,000 pounds, and tire pressures of 110 pounds, the 18T9 delivers a contact pressure of 4,000 pounds with each of its independently oscillating wheels. Incorporating all the quality features of the famous BMCO line, the 1879 has automotive type power steering, a torque converter and Revers-O-Matic transmission with four speeds forward and four reverse. For maximum compaction at a minimum cost, be sure to investigate the complete line of BMCO compaction equipment.

MAY, 1960



Construction of soil-cement base for shoulders along a highway near Hampton, Va., starts with a Pettibone Wood bulker depositing cement onto the select borrow.



A Pettibone Wood self-propelled Roadmixer mixes the select borrow and cement with water furnished by the Ford tank truck on the road.



A Galian motor grader follows the Roadmixer to spread the soil-cement mix to the desired width for the 10foot outside and 4-foot inside shoulders.



Compaction of the soil-cement base for the shoulder of the interstate route is handled by this Tampo roller.



The second of two hot-mix lifts is placed by a Barber-Greene finisher, while a Buffalo-Springfield tandem roller compacts the surface.

#### Soil-cement bases support

#### Shoulders built to last

When they build roadway shoulders in Virginia, they really build them to last. This was evident on a project where Nello L. Teer Co., Inc., Durham, N. C., completed a 3.7-mile section of Interstate Route 64 near Hampton, Va.

Teer started shoulder construction after paving the two 24-foot 9-inch unreinforced-concrete roadways.

#### Sail-cement base

The 10-foot outside shoulders and the 4-foot inside shoulders called for a 6-inch-thick soil-cement base under 3 inches of H-2 asphaltic concrete. Teer had to use select borrow to grade the shoulder areas, which were shaped by a Caterpillar grader.

A Pettibone Wood bulker, equipped with a Link-Belt screw feed, then deposited about 43 pounds of cemer per square yard along the shouler area. The bulker, riding along the edge of the roadway slab, was to lowed by a Pettibone Wood Readmixer that mixed the cement and alect borrow in place with water. The soil-cement mix was discharged through the rear end of the Roadmixer after 33.35 gallons of water per square yard was introduced into the mix.

The soil-cement mix was graded and shaped to the desired width of the inside or outside shoulders by a Galion grader. It was then compacted by a Tampo self-propelled pneumatic roller. After compaction, the soilcement base was about 3 inches be-

## Advance Progress Report

# CF&I-Wickwire develops a DOUBLE

# New wire drawing technique gives you longer-lasting wire rope

CF&I-Wickwire's premium wire rope—Double Gray—has now been improved by a remarkable new wire drawing technique. This new wire rope—Double Gray-X—provides EXTRA LONG LIFE.

Wickwire's advanced wire drawing process is the joint effort of our research engineers, metallurgists and key production people. They sought to reduce the friction between the wires within the rope itself, thus producing a wire rope with greater resistance to bending fatigue. An important step in Wickwire's new wire drawing process is the use of molybdenum disulphide. "Moly Disulphide" builds a thin, permaner molecular shield around each wire. Couple with Wickwire's other advanced wire process ing techniques, it gives these results:

• Friction-free interaction of the individual wires in every strand of Double Gray.X-A molecular jacket of Moly Disulphide on each wire helps cushion them against the effects of bending, crushing and abrasion. As the rope operates over sheaves, for example, the molecular shield tends to prevent the wire surfaces from grinding against each other, reducing friction and wear.



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#### Shoulders paved

ging two Barber-Greene finishers, one for the 10-foot shoulders and one for the 4-foot shoulders, Teer topped the soil-cement base with 3 inches of H-2 asphaltic concrete. This was placed in two lifts, compaced by a Buffaio-Springfield tandem roller.

The \$2,500,000 contract section was designed by Parsons, Brinckerhoff, Hall & Macdonald, New York, N. Y., the consulting engineering firm for the Virginia Department of Highways. Troy F. Johnson was the project manager for Nello L. Teer, and D. S. Butler was the resident engineer for the highway department. THE END



STORM AND SANITARY-SEWER EXCA-VATION in Indianapolis is carried dow an average depth of 22 feet by a Manitowoc Model 2000 dragline. About 22,-000 feet of 42 and 48-inch concrete line for the project is being constructed by Thompson Construction Co., Inc., In-dianapolis. The project is expected to be completed by August of this year.

# lops a superior wire rope

# KA

Smoother surface to the wires - In any wire, tiny imperfections occasionally form on the surface. These "weak links" can cause premature breaking of the wires and impair the life of the rope. Moly Disulphide helps eliminate any minute nicks, creating smoothersurfaced wires.

• Higher degree of toughness which is essential to longer wire rope life-Moly Disulphide greatly minimizes the friction involved in the drawing operation, thus preventing the wires from "heating up". This assures the correct physical properties for every wire in Double Gray-X and helps the wire retain its original toughness.

Double Gray-X will be made in a wide range of sizes and constructions to give greater operating economy and reduced downtime for all types of rope-using equipment. It will be available soon from CF&I-Wickwire's chain of warehouses and through a network of nationwide distributors.

In addition to longer life, Double Gray-X gives you the extra strength of Double Gray Wire Rope. Made of extra improved plow steel with an Independent Wire Rope Core, this rope gives 15% higher breaking strength than the catalog breaking strength of an improved plow steel rope with IWRC.

#### EXTRA STRENGTH

## WICKWIRE RO

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#### RCA names plant manager

Robert E. Wilson has been appointed manager for the new industrial electronics plant that the Radio Corp. of America will build in Washington County, Pa. The plant will be built on a site on the Washington-Canonsburg Road in Chartiers Township. It will produce mobile and other types of communications equipment.

An administration and engineering building will contain 50,000 square feet of floor area, and a manufacturing center will have 130,000 square feet.

#### Yale & Towne assigns

William D. Black has been appointed assistant to John A. Baldinger, vice president in charge of domestic and foreign material-handling operations for The Yale & Towne Mfg. Co., Philadelphia, Black will work in the company's executive offices in New York City.

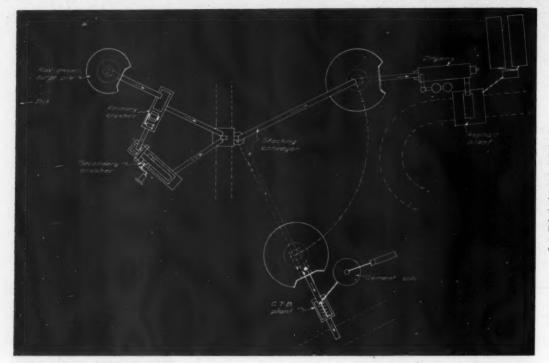
Neal J. Kemp, manager of the Yale Industrial lift-truck and tractorshovel sales and service branch in Detroit, has been named manager of the new, enlarged Chicago branch. He succeeds Arthur H. Dobler, who has been appointed an executive officer of the Yale Materials Handling Division. From Chicago headquarters, Dobler will be in charge of management material-handling relations for the division with top industrial concerns in the Midwest.

#### **Pacific Mercury division** moves to home plant

■ The Marketing Division of Pacific Mercury Mfg. Corp. has moved from North Hollywood, Calif., to the company's home office plant at 8345 Hayvenhurst Ave., Sepulveda, Calif. All personnel will transfer to the new

#### Worthington promotes

George E. Hunter has been promoted to manager of the portablecompressors and contractor-tools sales section of the Holyoke (Mass.) Division, Worthington Corp., Harrison, N. J. He succeeds J. A. Gray, who has resigned. Hunter was formerly chief engineer of the portablecompressor section.



This crushing-screening layout, geared for high production, did a creditable job for V. C. Mendenhall Co., Las Vegas, in turning out material for subbase, cement-treated base, and hot-mix pavement for Interstate 15 in southwestern Utah. The 30-inch feeding conveyor is at the side of the primary unit; material goes in a straight line to the surge bin. Oversize goes to the secondary unit Keeping fines out of the secondary unit helped step up production.

# Increased production with unusual plant layout

An unusual arrangement of plant units enabled a relatively small crushing plant to keep pace with subbase, cement-treated-base, and bituminous-paving operations, even though two or more of these processes were usually going on simultaneously.

The plant arrangement boosted production by keeping the fines out of the secondary unit. The setup also made it possible to deliver finished material either directly to trucks or, by a stacking conveyor, to the CTB or hot-mix plants. The crushing plant

ran 24 hours a day to maintain stockpiles for the other plants, which worked a single daily 10-hour shift.

The full productive capacity of these carefully integrated plants was vital to the contractor, V. C. Mendenhall Co., Las Vegas, Nev., in his race to complete the paving of the 8-mile section of Interstate Highway 15 (U.S. 91) in southwestern Utah.

The grading, drainage, and structures had been completed under a series of earlier contracts—one of them also held by Mendenhall. All of

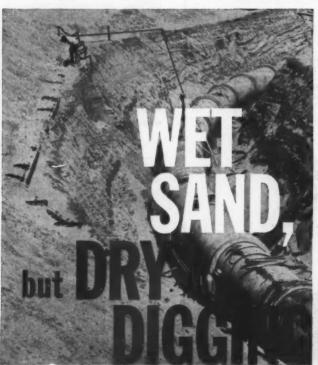
these jobs were designed and awarded by the Utah State Road Commission, with construction under the supervision of the Cedar City District.

Mendenhall's \$790,000 contract provided for the placing of a variable lift of minus 2-inch subbase material, a 4-inch compacted cement-treated base courage, and two courses of asphaltic-concrete surfacing. Job quantities included 134,000 tons of subbase gravel, 78,500 tons of CTB mixture, 89,000 tons of bituminous concrete, 1,730 tons of sealing chips, and 24,000

linear feet of Armco guardrail.

#### Crushing-plant setup

With all of these aggregates to produce in a limited time, the contractor set up a plant designed for high production and economy. The primary and secondary screening and crushing units were set at nearly right angles to each other. A 24-inch conveyor was set to pick up all of the fines from the primary crusher and deliver them directly to a surge bia. Oversize from the primary went to



JUST A FEW YARDS
from the surf line,
a Stang dewatering system
is predraining an excavation
area of beach sand.
Note the steep angle
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the slopes.
In any terrain,
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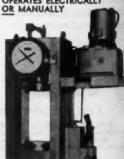
#### JOHN W. STANG CORPORATION

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For more facts, use Request Card at page 18 and circle No. 328



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   OPERATES ELECTRICALLY



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- 250,000 LB. LOAD RATING FOR CYLINDERS, CORES, BLOCKS, BEAMS, CUBES, BRICK AND DRAIN TILES

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NEW CASTLE PA. U.S. A

For more facts, circle No. 329
CONTRACTORS AND ENGINEER



As Cat scrapers bring material in from the pit, a D8 tractor-dozer feeds a Cedarapids reciprocating feeder that loads the 30-inch belt supplying 36×24 Cedarapids primary unit, center. Fines go to the surge bin, right; oversize to the Cedarapids secondary unit. Finished material goes from the secondary unit to the surge bin.



The surge bin delivers finished material to the stacker conveyor at this point, but trucks can also load at the bin. Production went to 325 tph on the subbase, but dropped to less than 300 tph for cement-treated-base and hot-mix aggregates.



Near the hot-mix plant is the pugmill mixing plant producing the CTB at a rate of 450 tph. A side-delivery conveyor arrangement accommodates the big Cook Bros. units. These are loaded with 60,000 to 65,000 pounds of mix in 4 minutes.

the secondary unit. Another 24-inch belt delivered finished material from the secondary to the same surge bin.

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For convenience, the 30-inch conveyor feeding the primary unit was set at the side instead of in its usual end position. In this way, material from the pit passing the primary screen went in a practically straightline flow to the surge bin. Only the oversize traveled the other three sides of the diamond-shaped layout as it passed to the secondary crushing unit and then to the surge bin.

All of the units in this setup were Cedarapids, from the belt feeder and 30-inch feed conveyor through the 24×36 primary crusher and the secondary roll crusher to the surge bin.

When ground water was encountered in the pit at a depth of about 10 feet, the contractor decided to strip a large area and take only the dry material. A pair of Cat DW15 scrapers and a D9 tractor-dozer brought the raw gravel to the crushing setup. A D8 dozed it to the trap. A small amount of trash and a few

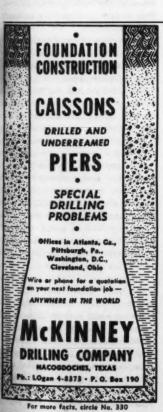
oversize rocks were picked from the primary feed belt by hand.

When the plant was producing the minus 2-inch subbase aggregate, a good percentage of the raw gravel went through the primary unit and directly to the surge bin, where it was loaded into trucks. With only a light load on the secondary, production of this material averaged around 325 tph. On the minus 1-inch gravel for the CTB and hot-mix, a great deal more of the material went to the secondary, and, as a result, produc-

tion dropped to less than 300 tph.

#### Surge bin does double duty

The surge bin that received the finished product from the crushing plant was arranged to serve two purposes. First, trucks could drive under and be loaded directly from its clam gates. The subbase and some other materials were handled this way. Second, a chute leading from a gate in the side of the bin could deliver the rock directly to the boot of a stacker conveyor that built stockpiles





For more facts, use Request Card at page 18 and circle No. 331



A Jersey spreader, being fed by one of the big Cook Bros. truck-trailer units, lays down enough material for a 4-inch compacted base. CTB compaction is handled by the Buffalo-Springfield 10-ton 3-wheel roller.



A second Barber-Greene finisher on the job lays a second strip of the 2 inch paving course. The material is being supplied to the paver by one of the International 200's.



#### WORLD'S LEADING LINE OF QUALITY DUMP AND TRAILER BODIES

# bigger loads greater stability faster dumps



# New Anthony Teleramic Twin Out-Mount Telescopic Hoists

New Anthony Teleramic Twin Out-Mount Telescopic Hoists — lighter, stronger, faster lift for more payload. Eliminates deadweight of cams, links, arms, etc. Mounted lower, wider for greater stability. No well necessary because of twin out-mount. Simplified design takes less power, less maintenance. Ring-trussed telescopic cylinders eliminate buckle, bulge and bends . . . strongest in their class! Designed for use with Anthony heavy-duty dump bodies—balanced strength and ruggedness. Applies hoist power toward front end of load for maximum mechanical advantage.

Illustrated is the heavy-duty dump body built with extra margin of quality, strength and ruggedness you expect—and get—from Anthony. Have your Anthony distributor recommend the hoist and body you need. If you don't know his name, write us. Anthony Company, Streator, Ill.



Another example of Anthony leadership: world's largest honing machine, specially built for Anthony, produces highest quality precision cylinders.

ANTHONY









T SATE TRUCK-CRAI

For more facts, use Request Card at page 18 and circle No. 332

(Continued from preceding page)

for both the CTB and hot-mix plants.

Most of the minus 1-inch aggregate
was handled by the stacker.

The stacking conveyor built stockpiles over recovery tunnels containing conveyors that fed the CTB and hotmix plants. Thus there was no hauling or rehandling, except by conveyors, from the time the raw gravel hit the primary feed conveyor of the crushing plant until the finished mixes left the CTB and hot-mix plants.

#### Plant produces CTB

The cement-treated base material was produced in a plant built around an Eagle pugmill mixer. Aggregates were fed from the stockpile on a Cedarapids 30-inch conveyor. Cement was fed from a 400-barrel slio by a Link-Belt variable-speed auger that was calibrated to deliver 2 per cent of the mix by weight. The aggregate feed was split as it entered the pugmill, and the cement entered between the two aggregate flows. This feature increased the efficiency of the mixing.

The cement silo and its tall screw elevator were picked up by the contractor at the auction of an abandoned sulphur plant.

Water for the mix was delivered to the spray nozzles of the pugmill by a Sterling pump. The supply was obtained from a reservoir located about a quarter of a mile upstream from the plant.

This mixing plant was originally designed so that trucks drove under the mixer to get their loads. Mendenhall remodeled it by installing a surge hopper under the mixer with a high-speed 30-inch conveyor leading out to the side to load the trucks. This plant regularly turned out 450 tph of the CTB material.

The mix was hauled to the road in Cook Bros. truck-trailer rigs with 35-ton hydraulic dump bodies. The conveyor could load 60,000 to 65,000 pounds of the CTB mix into one of these trucks in just about 4 minutes.

On the road, the CTB was spread by a Jersey spreader mounted on a D8 tractor. It was compacted by a Buffalo-Springfield 10-ton 3-wheel roller and finished by a Cat No. 13



An all-electric Standard 4,000-pound batch plant has a capacity of 200 tph. Trucks are International 10-wheelers hauling 20-ton loads of the mix.



The day after the pavement is laid, a Buffalo-Springfield 3-axle 18-ton tandem gives it a final ironing to eliminate any irregularities left after the initial rolling.



A Ford lube rig supplies gasoline by hand pump to the B-G finishers. The rig has two Alemite lube pumps and reels and an Ingersoll-Rand compressor.

motor grader. The finished base was sealed with an application of 0.1 to all gallon per square yard of SS-1 emulsified asphalt applied by an Etnyre distributor.

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GINEERS

TB

#### Bituminous surfacing

The asphaltic-concrete mix was produced in a Standard 4,000-pound batch plant. The dryer, which burned No. 5 fuel oil, easily handled 200 tons of aggregate per hour as the plant turned out as much as 2,000 tons of mix per day. Storage tanks for 19,000 gallons of asphalt and the asphalthandling units of the plant were heated by a Childers hot-oil heater.

Both the hot-mix plant and the CTB plant were completely electric in operation. Power was supplied by three Cat diesel generators—a 100-kw and two 75-kw units. The Standard asphalt plant was fitted with snap couplings on all electrical and pipe lines. This greatly simplified and speeded the take-down and assembly operations when the plant was moved.

A fleet of 10-wheel International 200 dump trucks hauled 20-ton loads of the mix from the plant to the pavers. The big Cook truck-trailer rigs helped out on the long hauls.

Two Barber-Greene finishers placed the mix on the road. The first course was placed 2 inches thick in four 10foot-wide strips. The 11/2-inch second course was laid a foot narrower. The first course was tacked with cutback asphalt before the second was applied. A seal coat of RC cutback and stone chips will be applied this season.

As the finishers laid the bituminous concrete, the breakdown pass was made by a Buffalo-Springfield tandem roller. A Tampo 9-wheel rubber-tire roller made the second pass. On the following day, a Buffalo-Springfield 3-axle 18-ton tandem made the final pass to iron out any irregularities left in the earlier rolling.

#### Typical interstate design

The highway is of typical interstate design, with divided roadways each made up of two 24-foot travel lanes flanked by 10-foot outside shoulders and 4-foot inside shoulders. A depressed median separates the roadways. All intersecting roads are carried over or under by structures, with (Continued on next page)



Steel wheels specified. Dual pneumatic tires standard.

LIMA AUSTIN-WESTERN

### Crushes old concrete to aggregate subbase

"We crush old concrete into 21/2 in. aggregate for a subbase on asphalt and stone parking areas. Our portable Lima Austin-Western 2036 primary jaw crusher turns out a high daily tonnage with an absolute minimum of maintenance. We also have a Lima A-W apron feeder on another plant. The feeder has doubled production.

"Based on our experience with the crusher, feeder, and an Austin-Western grader, I'd say that the Baldwin-Lima-Hamilton Corporation turns out quality products which hold up longer and do better jobs than most competitive equipment."-George H. Souter, Gargaro & Souter, Inc., Detroit.

Lima Austin-Western offers a complete line of top quality crushing, screening and washing equipment. The finest materials, skilled workmanship, simplicity of design, and engineering experience are reflected in performance records. Depend on Lima Austin-

Westerns for accurately sized gravel in quantity and years of trouble-free service. Choice of compact, self-contained portable units or custom-engineered stationary installations. Both types assure you high-speed operation and lower tonnage costs. Ask a Lima A-W owner. See your nearest Lima Austin-Western distributor for facts and figures. Or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Cruehing, Screening and Washing Equipment BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION . LIMA, OHIO

For more facts, use Request Cord at page 18 and circle No. 333

(Continued from preceding page)

interchanges at important intersec-

One interesting feature is the incorporation of a dam into the roadway grading contract. Where Ash Creek crosses the highway alignment. a dam was built across the deep valley to serve as a flood-control and water-conservation project. The highway crosses on the crest of the dam. The dam is wider than it is long.

V. C. Mendenhall, owner of the company, spent a good deal of time on the job giving it his personal supervision. The job superintendent was Ardeau Childs, while J. P. John was acting superintendent on part of the work. Plant foremen were Gayle Aldred, Garth Cameron, and R. L. Phillips.

The Utah State Road Commission was represented on the job by resident engineer Richard K. Griffith, inspector R. B. Fotheringham, and party chiefs Don Nielson and Britten Terry. The Fifth District, with headquarters in Cedar City, is headed by district engineer Earl A. Johnson. The state director of highways is C. Taylor Burton.

THE END

### Lift-slab construction for 13-story building

■ Lift-slab operations on the 1800 Pacific Bldg., San Francisco, are well underway for the 13-story apartment house. All floors and the roof are in the form of post-tensioned concrete slabs. As floors are set in place, the 20 steel columns supporting the slabs will be extended higher into the air in preparation for succeeding series of lifts. There will be five series of lifts in all.

It will take a maximum crew of 10 men 45 days to raise the structure to its full height. The slabs measure 105×81 feet and are 8 inches thick. Each weighs 600,000 pounds. The slabs are lifted two at a time, and are raised one-tenth of an inch with each turn. They are supported by 20 steel columns and envelop three 115foot slip-form concrete towers, which already are in place. This is one of the first uses of slip-form concrete towers and post-tensioned lift-slab construction in combination. Use of the towers eliminates the need for erection bracing.

George P. Belcher is owner-contractor, and Herbert Korner is engineer in charge. The lifting operation is under the direction of Vagtborg Lift-Slab Corp. Calaveras cement is being used throughout.

#### Pomeroy division moves

The engineering division of J. H. Pomeroy & Co., Inc., formerly located in Los Angeles, has moved to offices in the new Pomeroy Bldg.. Sansome and Pacific Streets, San Prancisco. This building will be the company's world headquarters for all its departments, divisions, and subsidiary companies.

#### Hydroelectric plant to be erected in Labrador

■ The British Newfoundland Corp. Ltd. will build a 120,000-hp hydro plant near Hamilton Falls, Labrador. The construction site, known as Twin Falls, is on the Unknown River, some 12 miles southwest of Hamilton Falls. It has an estimated potential of 300,-000 horsepower: the remainder of the potential will be developed as the demand arises.

Running roughly parallel with the river is a dry gorge, whose bed at its upper end is about 300 feet below the normal river water level above the falls. In a 3-mile stretch of the river there are two sets of falls, each set in turn being made up of twin falls. The total drop in this distance is more than 400 feet. The general plan of development is to divert the river from the plateau level through a canal and penstocks to a powerhouse in this gorge.

Water will be diverted by a rockfilled timber crib overflow dam about one mile above the upper set of falls into a canal about 6,000 feet long. The canal, excavated mainly in earth. is designed to take the flow required for a 180,000-hp installation with a maximum water velocity of 2 fps. It can later be enlarged to carry the flow for a 300,000-hp installation.

The concrete intake structure will be built with provision for three 60,-

000-hp units. Intakes for two a units can be added later. This structure ture will be built into an earth d containing about 470,000 cubic park of material. In addition, there will be five small earth cutoff dikes cantaining a total of about 100,000 cube yards.

Penstocks will be 13 feet 6 inches in diameter and about 1,600 feet lone There will be a separate pension for each 60,000-hp unit. The power house will initially contain two units but rock excavation will be carried out for the ultimate five units. The plant will be designed to operate as local automatic control.

The project is expected to be completed in the summer of 1962.



# Another example of E

No matter what your job may befrom small grading work such as land improvement, plant sites or secondary road construction to the big million yard-and-over projects-there's a Euclid scraper of the size and type that matches the job. Each one is ruggedly built for long life in heavy service...job proved for big productive capacity . . . and is years-ahead in engineering design with easy service accessibility that cuts downtime.

**EUCLID** Division of General Motors Cleveland 17, Ohio

Plants in Cleveland and Hudson, Ohio and Lanarkshire, Scotland

MODELS

SIX-WHEELERS

12 yds. MODEL SS-12...17 yds. heaped...227 kg
...5-speed transmission... 21.00 x 25 din
and scraper tires, with 24.00 x 25 optional.

MODEL SS-18...25 yds. heaped...330
336 h.p.... Torqunatic Drive or 10-ayu
standard transmission...24.00 x 25 in
standard, 29.5 x 25 optional.

MODEL SS-24...32 yds. heaped...380 ha... Torqmatic Drive with converter lock-up... 27.00 x 33 tires are standard with 33.5 x 3.

33 yds. MODEL SS-33 ... 43 yds. heaped ... 432 kg ... Torqmatic Drive with converter lock-t 33.5 x 33 tires on drive and 37.5 x 33 on x

Maximum stability for long, high-speed hauls... scraper bowls are interchangeable with bottom dumps of 13, 17, and 30 cu. yd. struck capacities





LID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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Drive or 10-spect 24.00 x 25 firs

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segmeering for a proposed 350highway program in the Repub-Associates, Miami, Fia. Expected to around \$14 million when comwied, the program will include some s miles of roads on the eastern of the Andes, leading through hasty unexplored territory to headsalers of the Amazon River and proviling access to Brazil for Ecuaderian crops.

The engineering study and report be submitted to the World Bank s the basis for a loan request to help in financing. An aerial survey

by one of the firm's planes, of territories where roads will be built, is already under way.

The proposed new program is separate from a previous \$30 million highway system in Ecuador, including a portion of the Pan American Highway, for which Rader & Associates are the engineers.

#### **Rockwin Prestressed news**

■ Steven Galezewski has been elected a vice president of Rockwin Prestressed Concrete Corp., Santa Fe Springs, Calif. He was formerly chief engineer for the firm, which is a subsidiary of United Concrete Pipe

### Convention Calendar

May 10-12 Highway Transportation

Congress
Eighth Congress, Mayflower Hotel,
Washington, D. C. Arthur C. Butler, director, National Highway Users Conference, HTC, 966 National Press Bldg.,
Washington 4, D. C.

May 19-20 Society of American Mili-

Annual Convention, Mayflower Hotel, Washington, D. C. Col. F. H. Kohloss, executive secretary, SAME, 808 Mills Bldg., Washington 6, D. C.

May 19-29 International Public Works and Suilding Equipment Exhibition Second International Exhibition, Aero-nautical Palace at Le Bourget Airport, Paris, France. Exhibition Secretariat, IPWBEE, 1, Avenue Niel, Paris XVII,

May 20-29 Pan American Highway

Congress

Eighth Congress, Ministry of Public

Eighth Congress, Ministry of Public

Royas Nieto, Secretary general, PAHC,

Ministerio de Obras Publicas, Bogota,

May 23-26 Design Engineering Show and Conference Conference and Show, Coliseum, New York, N. Y. Banner & Grief, 369 Lexing-ton Ave., New York 17, N. Y.

May 24-27 National Rivers and Har-bors Congress
Meeting, Mayflower Hotel, Washing-ton, D. C. William H. Webb, executive vice president, NRHC, 1028 Connecticut Ave. N.W., Washington 6, D. C.

Annual Spring Meeting, The Green-brier Hotel, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WEI, 1049 National Press Bldg., Wash-ington 4, D. C.

May 30—June 4 Concrete Reinforcing Steel Institute
Meeting, The Greenbrier Hetel, White Sulphur Springs, W. Va. H. C. Delsell, managing director, CRSI, 38 S. Dearborn St., Chicago 3, Ill.

June 8—11 National Society of Profes-

sional Engineers
Annual Meeting, Statler Hotel, Boston,
Mass. Charles Ritchie, NSPE, 2029 K St.
N.W., Washington 6, D. C.

Board Meeting, Edgewater Beach Hotel, Chicago, Ill. Robert M. Koch, NLII, 1015 12th St. N.W., Washington, D. C.

June 13-24 Fundamentals of Welding

Summer Conference Course, Ohio State University, Columbus, Ohio. W. L. Green, Department of Welding Engineering, Ohio State University, 128-A Industrial Engineering Bidg., 190 W. 19th Ave., Columbus 10, Ohio.

June 19-24 Management Develop-ment Conferences.

Conferences, California Institute of Technology, Pasadena, Calif. Manage-ment Development Center, California In-stitute of Technology, Pasadena, Calif.

June 19-24 Western Association of State Highway Officials Meeting, Multnomah Hotel, Portland, Ore. W. C. Williams, chief engineer, Ore-gon State Highway Commission, Salem, Ore.

June 20-25 American Society of Civil

Reno Convention, Mapes, Riverside, and Holliday Hotels, Reno, Nev. W. H. Wisely, executive secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

June 22-23 The Asphalt Institute Midyear Business Meeting, Glacier Park Lodge, Glacier Park, Mont. TAI, University of Maryland, College Park.

June 26-July 1 American Society for Testing Materials
Annual Meeting and Apparatus Ex-hibit, Chalfonte-Haddon Hall, Atlantic City, N. J. F. F. Van Atta, assistant secretary, ASTM, 1916 Race St., Phila-delphia 3, Pa.

June 27-29 American Society of Land-

scape Architects
Sixty-first Annual Meeting, Waldorf-Astoria, Hotel, New York City, N. Y. Wolcott E. Andrews, general chairman, ASLA, 238 E. 68th St., New York 21, N. Y.

June 27-29 School for Highway Su-perintendents
School, Cornell University, Ithaca, N. Y.
J. W. Spencer, highway research and extension engineer, Riley-Robb Hall, Cor-nell University, Ithaca, N. Y.

July 18-22 Thin Shell Concrete Struc-

tures
Course, Case Institute of Technology,
Cleveland, Ohio. Dr. John B. Scalzi, associate professor of structural engineering,
Case Institute of Technology, University
Circle, Cleveland 6, Ohio.

-For more facts, circle No. 334

# of Euclid's Greater Dimension

MOST MODERN AND COMPLETE LINE OF SCRAPERS IN THE INDUSTRY



Twin-Power for big productive capacity and work-ability . . . a one-man earthmoving spread that can work more days and lengthen the working season.

MODEL TS-14...20 yds. heaped... two engines with a total of 296 h.p. ... separate Torqmatic Drive for each axie...24.00 x 25 tires.

24 yds. > MODEL TS-24...32 yds. heaped... total of 563 h.p. ...separate Torqmatic Drives for each axle...tires are 27.00 x 33 standard with 33.5 x 33 optional.



### OVERHUNG

Excellent maneuverability and ease of handling combined with power and speed that cuts cycle time.

MODEL S-7...9 yds. heaped...148 h.p.... with Torqmatic Drive ... full 90° hydraulic steering ... 18.00 x 25 tires standard, 21.00 x 25 optional.

12 yds.

MODEL S-12...17 yds. heaped ... 227 h.p.... 5-speed transmission...full 90° hydraulic steering ... 24.00 x 25 tires.

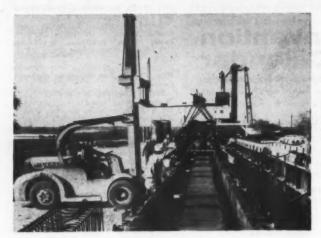
21 yds. MODEL S-18...30 yds. heaped...335 h.p.... with Torquatic Drive and converter lock-up...27.00 x 33 tires standard, 33.5 x 33 optional.

Get all the facts and see how Euclid's Greater Dimension can bring a better return on your scraper Investment.

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PRESTRESSED-CONCRETE BEAMS are important products of the Lafayette, Ind., prestress plant of American-Marietta Co. A Hyster forklift truck is helping workmen position rein-forcing bars inside Blaw-Knox steel forms after initial concrete placement. The company, a major producer of concrete pipe, has four 230-foot-long prestressing beds at this plant devoted to beam production.

### **Armco Retaining Wall** Saves Ground, Hides Tanks



Beginning of erection of the Armco Bin-Wall. Upright tanks



Behind this Armco Retaining Wall are 16 horizontal storage tanks. Even during erection, the wall did not interfere with adjacent railroad.

Interchemical Corporation, Finishes Division, Cincinnati, Ohio, had to install more storage tanks for their industrial finishes—but did not want to sacrifice needed land. An all-metal Armco Bin-Type Retaining Wall helped solve

Because the site was on sloping ground and the lowest part was unoccupied, an Armco Wall proved the ideal solution. It made use of available land without encroaching on the adjacent railroad. Behind this wall, in an excavated

area, 16 storage tanks were installed horizontally-including four that previously had been installed upright.
Earth was then placed over the installed tanks, and the

entire area paved. Now, not only are the 16 tanks out of sight but the surface above them has been conserved for future use

Write us for a copy of the new Armco Retaining Wall catalog. Armco Drainage & Metal Products, Inc., 6530 Curtis Street, Middletown, Ohio.

### ARMCO DRAINAGE & METAL PRODUCTS



Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division . Sheffield Division . The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

For more facts, use Request Card at page 18 and circle No. 335

### Single-driver control of multi-car highway train is tech institute study

The simultaneous control by driver of 12 or more powered can coupled together to form a "combe support train" is now being invest gated at Stevens Institute of Ten nology, Hoboken, N. J., under a one year \$75,000 contract with the U. Army Transportation Research Com mand. Fort Eustis. Va.

Designed for long hauls, the "train" would travel on highway. poor roads, and other surfaces, carry. ing up to 100 tons of cargo at mari. mum speeds of 25 mph. A driver the lead cab would control speed and steering for all cars. If the power is one of the units should fail, the disabled unit could either be eliminate or retained as part of the train. Once at its destination, the train could be separated and the units driven away as individual vehicles.

Stevens will make a study of various solutions for making the combat-support train a reality, and will set up a program to test and develop systems that are judged workship Under the joint direction of the Ma chanical Engineering Department the Davidson Laboratory, four or fa engines and transmissions will be at tached to each other and will n under conditions simulating valleys, icy slopes, sharp curves, a other travel obstacles. This will me running the engines at various angles

The purpose will be to develop and test controls to cope with such problems as cutting the power of and possibly braking trucks traveling downhill while increasing power in that part of the train traveling uphill or on level ground.

The primary advantages of the combat support trains are a considerable saving in manpower, the ability to travel on almost any kind of road or surface, and more efficient highway usage. Twenty-four men would be required to operate 12 separate vehicles on long hauls, but when 12 equivalent vehicles are coupled together into a train, only two or three operators are required. The closely coupled train occupies only about one-fifth the highway length of an equivalent military convoy of separate vehicles.

### **Euclid Division names**

John A. Cravens has been appointed district representative in the central sales region for Euclid Division. General Motors Corp., Cleveland. He succeeds Olin A. Lee, who has been named manager of Euclid's Iron Range branch in Hibbing, Minn. Cravens will cover Wyoming, Colorado, New Mexico, and Arizona.

### **Goodrich appoints**

Charles E. Stonebraker has been named manager of customer service for the B. F. Goodrich Industrial Products Co., a division of The B. F. Goodrich Co., Akron, Ohio. Stonebraker was formerly staff credit manager for the company.

CONTRACTORS AND ENGINEERS

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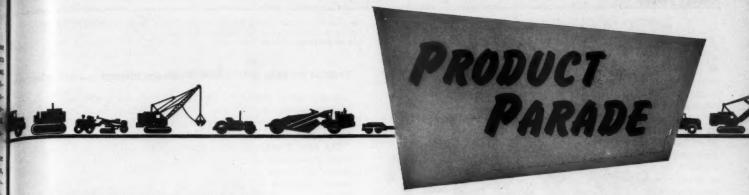
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For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.





### Tamping compactor is interchangeable with rear wheels of tractor

The Model DW20A tamping compactor has been introduced by the Hyster Co.'s Tractor Equipment Division.

With compaction wheels designed for top effectiveness at high speeds, the unit offers compaction in all classes of soil and rockfill material at speeds up to 15 mph.

The DW20A is available with interchangeable tamping wheels or Hyster's grid wheels. It operates as an integral part of the Caterpillar DW20 tractor. Rear tractor wheels are replaced with compacting wheels, and a gooseneck trailing roller contains two similar wheels. Combined coverage width is 10 feet.

For further information write to the Hyster Co., Tractor Equipment Division, Dept. C&E, P. O. Box 328, Peoria, Ill., or use the Request Card at page 18. Circle No. 105.

### Automatic lateral shifting, power tilt are features on new trencher

The Cleveland JS-30, with instant lateral positioning and tilting of its digging wheel, digs trench behind either crawler or at any point within its 6-foot width. It also cuts vertical trench on side slopes and in similar conditions where one crawler track is on a higher level than the other.

Lateral shifting of the digging wheel enables the JS-30 to dig the edge of a 24-inch-wide trench 5 inches outside either track. The JS-30's standard trench capacity is from 11 to 24 inches wide, down to  $5\frac{1}{2}$  feet deep.

A 370-cubic-inch diesel engine develops 56 horsepower at 1,250 rpm and drives through the main transmission to the digging-wheel differential.

For further information write to The Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 42.

### 1-cubic-yard tractor shovel has 3,000-pound load capacity

The Frank G. Hough Co. announces a new Payloader tractor shovel that has an operating capacity of 3,000 pounds and is equipped with a 1-cubic-yard bucket.

The 4-wheel drive features the company's full power-shift Paylomatic transmission with matched torque converter. With three speed ranges in each direction, all shifts can be made on the go with no need to stop for range shifts.

The H-30 is powered with a 77½-hp heavy-duty gasoline engine. The machine offers a clearance of 8 feet 4 inches under the cutting edge, with bucket in dumped position, and a 29-inch dumping reach ahead of the front tires.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 2.





The new line of CMC transit mixers comes in 24 models designed to give an exceptionally fast rate of discharge of even lowest-slump concrete.

### Transit mixers offered in steel, aluminum

A new line of Transcrete transit mixers available in steel and allaluminum models has been announced by the Construction Machinery Co.

The new Transcretes feature a flared drum design with 25 per cent deeper end blades to provide fast, smooth discharge of lowest-slump mixes.

Other features include: an automatic wash-down system in which the operator simply turns on a valve and 5 high-pressure spray nozzles automatically wash down mixer collecting hopper, lip of charging hopper rear blading, back edge of drum, drip rings; single-lever control to permits the operator to start and the drum, change drum direction, a crease and decrease drum speed in front or rear of the mixer; and tional "automatic measuring" wittank on which the operator can at the measuring dial and add was from ground level.

The new CMC Transcretes an available in steel or aluminum, in a models in all standard sizes, and in three types of drives: separate engine drive; flywheel truck-engine drive; and standard truck-engine drive.

For further information write in the Construction Machinery Co. Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 109.

### Crusher side setting indicated externally

Allis-Chalmers announces an electromagnetically operated system for indicating externally the close side setting of the firm's gyratory crushers equipped with Hydroset adjustment of the main shaft and crusher mantle.

The indicating system is used in conjunction with the hydraulic adjustment of the main shaft even while the crusher is in full operation.

Magnets are fastened to the morable cylinder of the hydraulic adjustment and move up or down with this cylinder. As the magnets more, an electric probe permanently fastened within the crusher's bottom shell assembly receives a signal and immediately and accurately registers the movement on a visual instrument mounted at any convenient location. The unit is calibrated to make adjustments for wear.

The setting indicator is available as optional equipment on all new Allis-Chalmers gyratory crushers in the Superior and Hydrocone lines.

For further information write We the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee I, Wis., or use the Request Card at page 18. Circle No. 88.

### Concrete placement units have large capacities

Two new concrete placement machines are available from True Gun-

Known as Models F-2SL and G-4A, both units are equipped with a skip loader and have an air cylinder that switches the valve from one tank to another instantaneously.

The Model F-2SL reportedly will shoot rock or pea gravel up to ½ inch in diameter at the rate of 6 cubic yards of concrete in place per hour. The Model G-4A will shoot rock or

SHORT CUT TO LONG LINES

Use This
NAYLOR
Combination
to Speed
Pipe Line
Installations



You save work and speed the job when you team up NAYLOR Spiralweld pipe and Wedgelock couplings for air, water, or ventilating lines.

The light weight of NAYLOR pipe makes it easy to install whether you suspend it, support it, string it along the surface, or bury it.

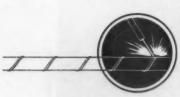
You get further short cuts by making connections with the NAYLOR Wedgelock coupling which is designed for faster, easier and more economical installation.

For long lines or short lines, you'll be time and money ahead to specify this NAYLOR combination. Diameters from 4" to 30" and thicknesses from 14 gauge to 8 gauge.

Write for Bulletin No. 59

The NAYLOR Wedgelock coupling makes a positive

The NAYLOR Wedgelock coupling makes a positive connection, securely anchored in standard weight grooved ends. A hammer is the only tool needed to connect or disconnect it.



NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 80 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 336

The Model G-4A is designed to shoot ratk or pea gravel up to 34 inch in digmeter. It reportedly will place 9 cubic yards of concrete per hour.

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Both machines are said to be especally suitable for building thin-shell concrete buildings, as well as for tunnel work and for placing concrete in

For further information write to the True Gun-All Equipment Corp., Dept. C&E, P. O. Box 2526, Tulsa 1, Okia, or use the Request Card at page 18. Circle No. 77.

### Surveying instrument has improved design

An improved surveying instrument in measuring distance electronically is affered by The Geodimeter Co., a division of the AGA Corp. of America. The new device, called the Geodimser Model 4a, permits faster measgement of unknown distances. Readbility has been improved by the



fodel 4a's new reading dial that is mduated every ten divisions. Pointing time also is reduced as much as 5 per cent through the use of an enclosed coarse pointing sight, states the manufacturer.

The Model 4a contains a Kerr cell heater, permitting its use in extremeby cold weather. There is also an increase in operating range in daylight.

For further information write to The Geodimeter Co., division of AGA Corp. of America, Dept. C&E, 2013 Park Ave., South Plainfield, N. J., or the Request Card at page 18. Circle No. 94.

#### Heavy-duty ripper leaves room for winch

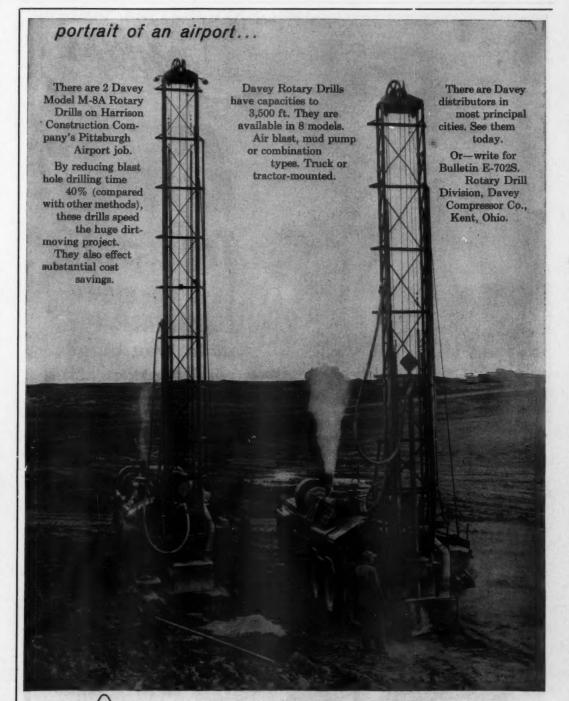
Especially designed to match the performance features of the International TD-25, a new heavier-duty version of the Ateco rock ripper is offered by the American Tractor Equipment Corp.

An important feature of this Model HR48 is the offset tool beam that provides ample clearance for mounting the ripper on tractors equipped with rear-mounted power-control winches. Other features include extensive use of alloy and heat-treated steels for increased ruggedness, 81/8-inch-bore hydraulic cylinders with 3-inch rods. and an extra-heavy tool beam of 11/2inch steel plate 11×12% inches in cross section.

Maximum ripping depth is 48 inches with standard shanks. Greater tool-beam lift has been provided to give ample clearance for "pipeliner" and cable-laying shanks.

Ateco rippers are also available for International TD-14, TD-18, TD-15, TD-20, and Drott Skid-Shovel combinations

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland, Calif., or use the Request Card at page 18. Circle No. 131.



### DAVEY COMPRESSOR CO.

Kent, Ohio

Rotary Drills — Portable, "Auto-Air", Tank-Mounted and Stationary Compressors

Air Tools — Mobile Machine Shops

For more facts, use Request Card at page 18 and circle No. 337

### Announce new equipment for body, frame aligning

Portable body and frame alignment equipment for both unitized and corrventional construction is now possible with the new Group 1679 body aligner manufactured by John Bean.

The 1679 is said to provide the operator with the versatility and power necessary to pull or push, easily and effectively, with setups inside, outside, or underneath the car.

Tools in the group include a 10ton, 10-inch travel Porto-Power jack; 12-ton hydraulic hand jack with 81/2 to 171/a-inch range: four 5-ton-capacity support stands adjustable from 1434 to 2416 inches: twist beam and

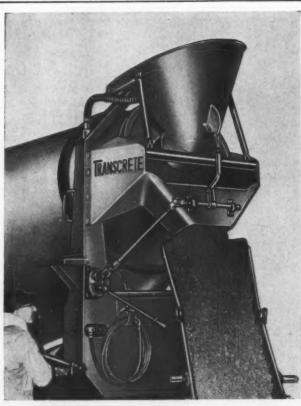
hanger; centering gages; and Diamond gage. A comprehensive frame and body straightener manual is included.

Tools permit all-angle pulls at any point on the body frame, squeezing and spreading action for frame-horn or side-rail corrections, diagonal sidesway corrections, and combination stretch and sag corrections.

For further information write to the Automotive Department, John Bean Division, Food Machinery & Chemical Corp., Dept. C&E, P. O. Box 840, Lansing, Mich., or use the Request Card at page 18. Circle No. 87.



The Road Bird sweeper can be mounted on a truck, Jeep, or tractor.



CME **Transcretes** have the RIGHT

COMBINATION\* to make you bigger ready-mix profits!

#### THE RIGHT COMBINATION OF MONEY-MAKING FEATURES . . .

New "flared" drum design, 25% deeper end blades, swing-out hopper for the fastest smoothest discharge of even lowest slump concrete, of any transit mixer. Automatic washdown system, single-lever operating control, the handiest chutes of all for still simpler, easier operation. More compact, extra rugged design; floating drive for lowest possible maintenance cost.

#### \*THE RIGHT COMBINATIONS OF STEEL AND ALUMINUM TO FIT EVERY NEED ...

36 different models! Transcretes are now available in ALL-STEEL; ALL-ALUMINUM; or ANY ALUMINUM-STEEL COMBINATION. Today's only fully tested and proven all-aluminum mixer. Weighs A BIG 36% less . . . carries up to a yard and one-half more legal payload in many states. Your choice of 3 drive types: Separate engine drive; Flywheel truck engine drive; and Standard truck engine drive.





literature on the new CMC steel and CMC aluminum Transcretes. Write today.

For more facts, use Request Card at page 18 and circle No. 338

### Sweeper can be towed or front-mounted

A newly designed road sweeper la been introduced by Little Giant Proj. ucts. Inc.

Known as the Road Bird, the unit can be used with truck, Jeep, or tractor, as either a tow-type or frommounted sweeper.

The front-mounted brush assemble of 6, 7, or 8-foot length, featuring a Wisconsin 7.4 or 11.5-hp engine, is easily attached or detached as a unit by removing one pin.

For further information write 6 Little Giant Products, Inc., Dept. C&E, 1578 N. E. Adams St., Peoris Ill., or use the Request Card at page 18. Circle No. 63.

### Concrete joint sealer takes 1,000-degree heat

Mobleytite, a concrete joint sealer, is available from the Garber-Mobie Mfg. Co.

According to the manufacturer, this sealant is impervious to jet ful, water, and oils. Because it is no extruding, no heating-up period is required. In addition, frost is mid to have no ill effects on it.

Mobleytite contains no asphalt coal tar, rubber, epoxy, or polyment It is offered in standard container (55-gallon open-head drums) for ap plication by most popular-make by draulic ram-type extrusion pumps.

For further information write is the Garber-Mobley Mfg. Co., Dept. C&E, Boyertown, Pa., or use the Re quest Card at page 18. Circle No. 58.

### Offer crane-excavator for on and off-track use

A carrier-mounted crane-excavator designed for multipurpose railroad use has been announced by the Bucyrus-Erie Co.

Designated Transit-Railer Model 11-B, it is equipped with both re ber-tire and flanged guide-rail when mountings for combined on-track off-track operation.

Rated as a 10-ton crane, the can be converted to a dragline, class shell, or hoe for a variety of cleanu and excavation jobs.

The rail wheels are roller-bearing



Guide rail wheels can be raised or lowered in a matter of minutes through a 2-speed gear-box cranking arrangement and telescoping structural steel legs.

### Seat for trucks, tractors provides added comfort

The 1960 model of the Flexible-Air Ride operator's seat for trucks, tractors, and other heavy-duty equipment has been introduced by the Flexible Air Seat Corp.

The entire seat assembly is supported on a soft cushion of compressed air contained in a special diaphragm and cannister located below the seat. According to the manufacturer, this compressed-air storage method absorbs pitching, swaying, and shocks transmitted from the road before they can reach the operator. Conveniently located adjustment controls can be operated by the driver while he is in the seat, to assure the necessary support for hips, back, and legs.

The seat frame is constructed from heavy-treated steel, and both the back and seat cushions are constructed from one-piece crushproof foam-rubber slab.

For further information write to the Flexible Air Seat Corp., Dept. C&E, 717 W. 11th St., Los Angeles 15, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 111.

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Peatures available for railroad crane-excavator service include: 5-speed full-reversing transmission, plus 2-speed auxiliary transmission; hydraulic power steering; remote control of carrier from operator's cab; tire load indicators; rail clamps (two per side for use on trestle work); steering lockout; front and rear guide-wheel guards; and four outriggers.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card at page 18. Circle No.

### flexible steel form

Binghamton Metal Forms' Radi-Lok, a new flexible steel form for producing uniform curves in concrete, can be preset to hold any desired contour.

Radi-Lok shortens setup time, minimizes stripping effort, and practically eliminates surface finishing, according to the manufacturer.

Lightweight but strong, the form is simple to use: set the stakes, select the curve by adjusting the band, and tighten the lock nuts. After concrete is placed, the form can be repositioned to repeat the same curve without any other adjustments.

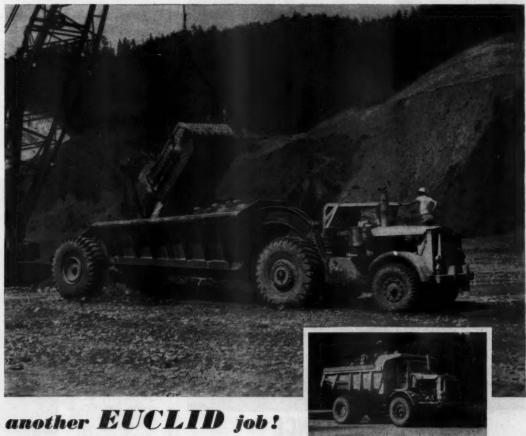
Radi-Lok comes in 10-foot lengths with heights ranging from 4 to 24 inches. The forms may be joined in series to make up a variety of contours.

For further information write to Binghamton Metal Forms, Dept. C&E, Box 848, Church St. Station, New York 8, N. Y., or use the Request Card at page 18. Circle No. 53.



Rigidity is built into Radi-Lok flexible steel forms: six wedges and six angle brackets clamp and brace each form against supporting stakes.

another earthmoving job...



HILLS CREEK DAM, in western Oregon, is part of the Willamette Valley Project being built by the Corps of Engineers to provide flood control, navigation, power and irrigation. Scheduled for completion in 1961 this 11 million yd. earthfill embankment will be 2400 feet in length, 1600 feet wide at the base and 24 feet at the crest.

Low bidder on the earthmoving phase of this big job was a joint venture of Green Construction Co., Des Moines, Iowa and the Tecon Corporation of Dallas, Texas. These contractors are using a fleet of 28 big Euclids... twenty bottom-dumps of 17 and 30 yd. struck capacities and eight 22 and 27-ton capacity rear-dumps... to haul earth and rock fill to the dam site. The "Eucs"

work two ten-hour shifts six days a week and have marked up an excellent record of high production and job availability.

With over 25 years of experience in building off-highway earthmovers exclusively, Euclid and its world-wide dealer organization offer a greater dimension in types and sizes of equipment that meet any job requirement. Your Euclid dealer can show you how advanced engineering and easier service-ability brings a greater return on investment.



EUCLID

DIVISION OF GENERAL MOTORS Cleveland 17, Ohio Euclid (Great Britain) Limited, Lanarkahire, Scotland

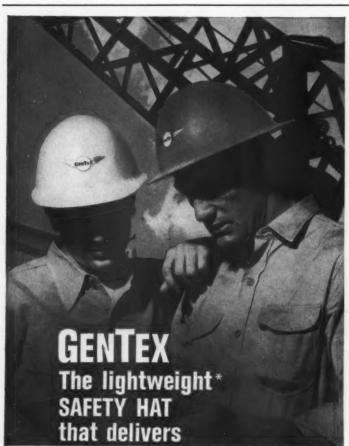
. . . a complete line of equipment for heavy earthmoving, mining, logging and many industrial operations . . .

For more facts, use Request Card at page 18 and circle No. 339



Hydraulic tilt control is an outstanding feature of the new Balderson BA944 angledozer designed for use with Cater-pillar's No. 944 wheel-type Traxcavator. It mounts on the

lift arms in place of the bucket. When the attachment is used in straight position, the extension brace folds in behind the blade, and hydraulic pitch control is obtained by actuating the bucket dump cylinders. The BA944 blade measures 35 inches high, 10 feet 2 inches long. When angled to the right or left at 25 degrees, it cuts a 9-foot 2-inch path. For further information write to Balderson, Inc., Dept. C&E, Wamego, Kans., or use the Request Card at page 18. Circle No. 16.



PACT RESISTANCE

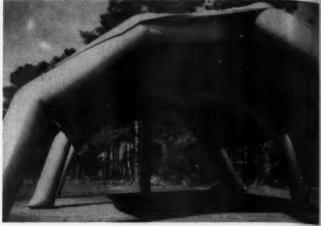
PENETRATION RESISTANCE less than ¼" penetration in 10-ft.-pound plumb bob test (Federal specs allow %")

PLUS DIELECTRIC RESISTANCE AND ALL DAY COMFORT

Exclusive no-wrinkle headband conforms to head contour, eliminates pressure on temples. 6-point suspension system, designed on same principle as jet pilot helmets, keeps hat in positive on same principle as jet pilot neimets, keeps hat in positive balance always—no more end-of-shift strain and fatigue. POLY-ETHYLENE shell won't crack at brim or crown when dropped—even on concrete. Smooth, modern design with choice of 9 colors impregnated right in the plastic for handsome appearance and instant job classification. Snap-in nylon and plastic headband with fingertip control, fully washable. Adjustable, self-storing chinstrap and winter liners available. Brim and peaked-cap models. 21216 oz. depending an impresented color pigment. \*121/2 oz. to 123/4 oz., depending on impregnated color pigment. We would be pleased to submit full details and a hat for testingjust drop us a note on your company letterhead.

Foremost manufacturer of helmets for military, industrial, civic and sports use. GENTEX CORPORATION, 450 7th AVE., NEW YORK 1

For more facts, use Request Card at page 18 and circle No. 340



In effect, the structure is a fire-resistant tent, supported by inflated plastic tubes. very small space when deflated

### Air-column structure adaptable to many uses

A new lightweight air-column structure for temporary or long-term shelter has been announced by Air Structures, Inc. Available in a wide range of sizes, it is adaptable to many uses for protection against rain or hot sun and, with enclosed sides, against heat or cold. Clear span lengths of 100 feet and more are possible.

All that is required for erection is

inflation of the air columns proper anchoring. Only a small presure is needed for support. Tre erection time is said to be one hour per 1,000 square feet of covered. Structures may be easily even after erection.

For further information write Air Structures, Inc., Dept. C&E, P. O. Box 8217, Shreveport, Ls., or use to card at page 18. Circle No. 32.

### ... for full power ... Rockford Clutches

Crawlers, tractors, shovels . . . need every ounce of power. The perfect power link between power link between the engine and the work is a Rockford Clutch. By design-ing the right clutch for the specific job, power waste is reduced to the absolute minimum Every ounce of power within the fuel is utilized for work. You get more production per gallon of fuel, more work per engine horsepower more for your dollar! Write for complete details .

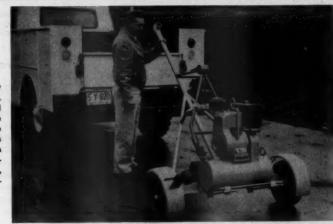


ROCKFORD CLUTCH DIVISION

314 CATHERINE STREET ROCKFORD, ILLINOIS Warner International
Wabash, Chicago, III.

For more facts, use Request Card at page 18 and circle No. 341

This new trailer, designed to transport Jay one-man vibratory compactors, permits easy loading and unloading by one man, whether he is moving the 235-pound Model J-13, the 335-pound J-18, or the 440-pound J-36. Of tubular welded construction, the trailer weighs 110 pounds. Its two metal-disk wheels have Timken tapered roller bearings and 4.00×8 pneumatic tires with tubes. The trailer is 92 inches long and 50 inches wide, as measured between the centers of the tire treads. For further information write to the J. Leukart Machine Co., Inc., Jay Division, Dept. C&E, 2222 S. Third St., Columbus 7, Ohio, or use the Request Card at page 18. Circle No. 81.



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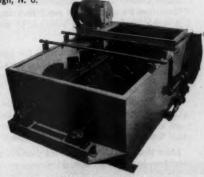
it's portable! it's self-erecting!

NFW Eagle Stabilized Road Base Mixer

Where mobility is required to keep the stabilized road base preparation plant close to construction sites, the Eagle Portable Base Mixing Unit is the answer. Semi-tractor positions the unit at the site. Then, hydraulically operated hoisting system quickly raises the entire unit to provide 9' clearance beneath the discharge gate of the 5 cubic yard bin beneath the mixer. Safety locking pins are then inserted in the four columns. Self-contained power unit—either electric motor or combustion engine—and V-belt drive. Totally enclosed gear drive runs in oil bath. Unit quickly made ready for travel. Thorough mixing provided of any road base materials. Stabilizing additives completely blended. Spray bars and flow meter provide addition of water in pre-determined amounts. Capacities: 125 to 900 tph. Eagle Portable Mixer shown is doing splendid job for Superior Stone Division of American-Marietta Co., Raleigh, N. C.

Eagle ECONO-MIXER with open bevel gear drive available for installation above storage bin or hopper in stationary set-up. Cast Ni-Hard paddles mounted on large diameter tubular steel shafts. Never before has such thorough mixing been available at such low cost per ton in such a sturdy "years-of-service" unit.

Send for Bulletin 1258



EAGLE IRON WORKS

### **EAGLE IRON WORKS**

ENGINEERS • MANUFACTURERS 159 HOLCOMB AVE., DES MOINES, IOWA

MANUFACTURES OF AGENCEATE WASHING AND CLASSIFYING EQUIPMENT, MAS PLANTS, DREDGING EQUIPMENT, PILE MANMERS AND BREAKER GALLA

For more facts, use Request Card at page 18 and circle No. 343

518F Hough Street

ARCO MANUFACTURING CO.

Sold and Serviced by Nation's Leading Distributors

Barrington, Illinois

D ENGINEERS



The Model RH York rake speeds up road maintenance, grading, and leveling of large tracts. The operator can raise, lower, and tilt the rake from the driving position.

#### Tractor-mounted rake for road, soil work

The Model RH heavy-duty tractormounted rake, which combines a rake, scarifier, and grader blade in one compact unit, has been introduced by the York Modern Corp.

The new model permits faster, more convenient and efficient operation because the rake may be raised, lowered, or tilted by the tractor operator directly from the driving position. It rakes a swath from 7½ to 10 feet wide, adjusts to 5 working positions, and may be angled to dis-

charge material to right or left.

The rake grades and levels; are out oversize material; spreads at gravel, or crushed stone; remainsticks, stones, and debris; and less a smooth surface.

Rear-mounted caster wheels at just vertically to regulate the waiting depth of the rake teeth.

For further information write a the York Modern Corp., Dept. Car Unadilla, N. Y., or use the Request Card at page 18. Circle No. 66.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card at page 18.

### New torque converters for power-shift vehicles

For motor graders, front-end loaders, tractors, and other vehicles with power-shift transmissions, Twin Disc offers a new line of sumpless torque converters.

These are single-stage units furnished in three different input torque capacity sizes: 350 pound-feet (1300 Series); 450 pound-feet (1500 Series standard-duty); and 650 pound-feet (1500 Series heavy-duty).

Both the 1300 and 1500 Series units have a power-takeoff point normally used as a power implement pump drive. A second PTO point is furnished on the 1300 Series only. This is a lower-capacity drive that can be used for a steering pump on vehicles requiring power steering.

The plumbing on the sumpless torque converter must be integrated into the transmission system or an



independently mounted sump supplied by the manufacturer.

For further information write in the Twin Disc Clutch Co., Hydraulic Division, Dept. C&E, Rockford, IL. or use the Request Card that is bound in at page 18 of this issue. Circle No. 14.



"Best investment we ever mode," says contractor of this trailer-mounted Malsbary HPC cleaning system.

# Take grief out of equipment cleaning with Malsbary HPC Cleaning System

Here's the speediest, most efficient system on the market for cleaning equipment, parts, etc. — the all-in-one compact, multipurpose package. Whether your cleaning involves layers of greasy dirt that cause engine overheating . . . heavy, abrasive grime . . . ice and frozen mud . . . dirty parts that slow mechanics . . . degassing tanks for new cargoes or welding repairs . . . too much downtime for cleaning — you'll find the Malsbary HPC system a quick, money-making solution to your equipment cleaning problems.

Key to fast, effective cleaning is the heat, pressure and volume delivered by the Malsbary HPC system. You get:

Hot solution at thermal-hydraulic pressures 2 to 4 times greater than any steam cleaner... hot or cold water at a dirt-blasting 300-400 psi... gentle rinse or wash water... wet steam for degassing and heating... and greatest time saver of all, hot solution and cold water, or wet steam and cold water, simultaneously from 2 to 4 guns.

More than 6000 in use. See for yourself how the Malsbary HPC system breezes through the toughest cleaning jobs. Ask your Malsbary dealer about 10-day buy-and-try plan... see phone book yellow pages or write us, outlining your cleaning problems.

ASK ABOUT the Malsbary green steam cleaner hose . . . It's durable, oil and abrasion resistant.



For more facts, use Request Card at page 18 and circle No. 344



For more facts, use Request Card at page 18 and circle No. 345

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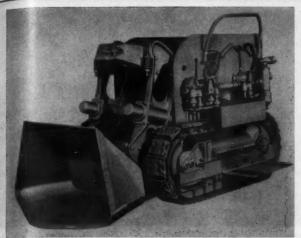




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The Eimco Model 630 can now fill bigger cars with less headroom in

### Underground excavator offers improved design

A design improvement that provides new protection on the rocker arm rail used on the Eimco Model 630 excavater-loader and other RockerShovels is announced by The Eimco Corp.

The invention reportedly makes it possible for the loaders to fill bigger cars with less headroom in tunnels.

The new rail allows the rolling path of the overhead rocker arm on this eminment to be lowered without reduring the required strength of the rail elements that support the rocker arms during operations.

The Eimco 630 is a crawler-type machine for underground rock loading. It can be powered either by air or ac electric motors.

For further information write to The Eimco Corp., Dept. C&E, 654 S. Fourth West St., Salt Lake City, Utah, or use the Request Card that is bound in at page 18 of this issue. Circle No. 47.

### Vacuum attachment holds drills against surfaces

A vacuum hold-down attachment for masonry drilling machines is offered by The Kor-It Co., Inc., of Santa Clara, Calif.

Called Grab-A-Slab, this attachment reportedly exerts 3,000 pounds of holding pressure, in just 10 seconds, locking masonry drilling machines firmly in position against the surface to be drilled. It fits all models of Kor-It machines and eliminates the

necessity for positioning drilling machines with weights, bracing, or lag

The attachment comes complete with a 115-volt vacuum pump of oilless design.

For further information write to The Kor-It Co., Inc., Dept. C&E, 991 Richard Ave., Santa Clara, Calif., or use the Request Card at page 18. Circle No. 123.



### It's Jaeger's new 3" pump...the "3PN" **Out-performs all previous models**

Pumps all the water a 3" suction hose can handle. With 4" suction hose pumps 28,000 gph at 10' lift. Sure-priming is correspondingly for priming is correspondingly fast, at all practical lifts.

AND LOOK HOW EASY TO MAINTAIN!

ction chamber and liner are removable for quick adjustment, rotation or replacement of liner plate. (New Model 3XPN offers same feature in a smaller pump.) See your Jaeger dis-tributor or send for catalog.



THE JAEGER MACHINE CO., 701 Dublin Avenue, Columbus 16, Ohio AIR COMPRESSORS . MIXERS . PAVING, SPREADERS and FINISHERS

For more facts, use Request Card at page 18 and circle No. 346

### Spur-geared hand hoists are compact, lightweight

A compact, lightweight spur-geared hand hoist, with working parts totally enclosed in sturdy aluminum alloy housing and frame, has been introduced by the Thern Machine Co. This unit is offered in eight sizes with lifting capacities from ½ to 10 tons.

The 3-ton-capacity size weighs only 701/2 pounds, including 10 feet of lift chain, and can be carried, placed, or operated by one man. A light hand pull of about 75 pounds will raise a full-capacity load.

For further information write to the Thern Machine Co., Dept. C&E, 3760 Fourth St., Winona, Minn., or use the Request Card at page 18. Circle No. 11.





#### BACKFILL COMPACTION COSTS CUT IN HALF

"On part of this job involving a tremendous backfilling project of more than a dozen bridges, I would estimate," says Jack Yount, "that by using the VR-72 we doubled our production and cut our compaction costs by at least one-half."

### TOUGH FILL EASILY REACHES DENSITY IN 1 TO 3 PASSES

Jack Yount, Vice-president and General Manager of Vinnell Constructors states: "We really had a problem when we started compaction operations on the interchange of the new Golden State and San Bernardino freeways. The fill soil was composed of oil shale, a lightweight, light colored shale and black organic material, and in addition, moisture content was 10-15% over optimum. After many passes and long hours of rework, a Sheepsfoot roller reached density requirements calling for 90% on a modified AASHO test.

"We had successfully used our company-owned Essick VR-54-T compactors in the past, but for this particular fill we chose their larger model VR-72-T. Used in conjunction with the Sheepsfoot Roller (to break up the clods), the Essick 72" vibrator brought the solid density to well above California State Requirements in from 1 to 3 passes.

There is an Essick Vibrating Compactor especially designed to solve your particular compaction problems. The contractor who must achieve higher densities, meet rigid compaction costs and still make every equipment dollar count, relies on ESSICK.



ALSO 14 MODELS OF TANDEM ROLLERS FROM 1/2 TO 14 TONS

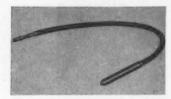
### **ESSICK MANUFACTURING COMPANY**

1950 Santa Fe Avenue Los Angeles 21, California

Affiliated with THE T. L. SMITH CO., Milw

For more facts, use Request Card at page 18 and circle No. 347

### Heavy-duty vibrator has 21/2-inch head



A heavy-duty 21/2-inch concrete vibrator has been developed by the Ingersoll-Rand Co.

Suitable for average building construction, walls, floor and roof slabs, medium columns, and light foundation work, the air-powered Size 10V vibrator will handle sections up to about 30 inches, with concrete of at

least 21/2 inches slump.

Weight with a standard 5-foot hose assembly is 251/2 pounds. The vibrating head measures 1734 inches long, 21/2 inches in diameter, and weighs 161/4 pounds. Over-all length with standard 5-foot hose assembly measures 84% inches. Other 10, 15, and 20-foot hose assemblies are optional.

At 90-psi air pressure, the new 10V delivers 15,000 vpm at no load and 9,000 vpm at full load.

For further information write to the Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 62.



Latest addition to the J. I. Case line of wheel tractors and equipment is the m gasoline-powered Model W-3. Primarily designed for use as a 2,500-pound-or ity loader and 3,000-pound-capacity backhoe, it can also be used with a wid choice of interchangeable equipment, including crane boom, dozer, all-purpo blade, scarifier-scraper, post-hole digger, and cutter-bar or rotary mowers. For further information write to the J. I. Case Co., Dept. C&E, 700 State St., Rocins. Wis., or use the Request Card at page 18. Circle No. 60.

### Special vacuum cleaner for drilling operations

The Vacmobile, a unit designed to recover water and concrete dust from all types of dry and wet drilling applications, is available from the Pullman Vacuum Cleaner Corp.

The lightweight, portable, heavyduty vacuum cleaner has no outside bag to snag or tear, and it features the firm's Never-Clog secondary filter that resists finely ground alkali and dust, as well as particles and chunks of stone and granite.

When water is used in conjunction with the drilling operation, the Pullman unit reportedly recovers it all, thus eliminating the problem of water overflows on inside drilling jobs.

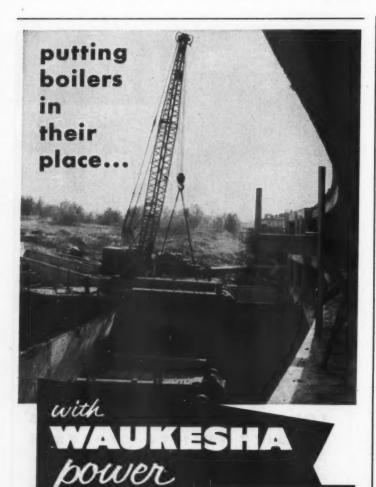
The Vacmobile is available in models of 3/4, 11/4, and 11/2 horsepower.

For further information write to



For all dry drilling jobs, the Pulli hose is attached to the drill.

Pullman Vacuum Cleaner Corp., Dept. C&E, 25 Buick St., Boston 15, Man, or use the Request Card at page 18. Circle No. 124.



Three boilers-28 tons each-are being safely lowered from flat bed trailers to the cellar floor-35 ft. down—at the new I.B.M. Research Center, Yorktown, N. Y. And that was only half the job. The crane had already transferred the boilers to trailers from railway flat cars. And it required from 90 to 110degrees of swing to handle these boilers. That's real maneuvering for a 20-ton crane. This Waukesha-Engine-powered Bucyrus-Erie 30-B Crane did it neatly. Gerosa Crane Service, Bronx, N.Y. are the owners.



Waukesha Gaseline, six cylind 41/4-in. x 51/2-in., 554 cu. in. di

Waukeshas are standard for eartion. Model 140 Series gasoline engines available up to 225 hp. Other models for crones or shovels, up to 1200 hp., Diesel ar gasoline. Se descriptive bulletins.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN TULSA LOS ANGELES

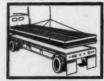
Factories - Waukesha, Wisconsin, and Clinton, law more facts, use Request Card at page 18 and circle No. 348

HEAVY-DUTY SELF-CONTAINED PORTABLE CAPACITIES TO 100 TONS \*TANDEM CONNECTED UNITS

MOTOR TRUCK SCALES that SAVE You Money

SPLIT FRAME UNITS

**SINGLE UNITS** 



Write Dept. CAE For Complete Information

\*These Portable Scales are designed from the ground up to give you greater operating efficiency at lower cost.

Two types of decks are offered: Heavy Checkered Steel Plate Runway or timber decks.

These scales are easily transported with the two steel bulkheads being held in place by two bolts, which are easily removable for transporting. Scales are of all-steel construction, eliminating problem of breakage. Simple design.



For more facts, use Request Card at page 18 and circle No. 349



and operated by the Hercules Construction Co., Ltd., This Motocart, owned and operated by the Hercules Construct mortally will haul 3,000-pound loads up a 25 per cent grade.

### three-wheel hauler has unusual features

The 3-wheel English-built Motocart is now available from the Linden nent Corp.

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ENGINEERS

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> The vehicle, offered in a wide choice d truck bodies, will reportedly haul 3,000 pounds up a 25 per cent grade.

> The single wheel in front is a tire meter wheel that does the pulling through mud, soft sand, and clay; it has hooked onto one side and geared to the driving wheel a single-cylinder 8-hp sir-cooled motor.

> Its speed is from 2 to 15 mph, and as consumption is said to be about 1% gallons for a full day's use. An menual feature is that the driver

may walk beside the vehicle, load it while it is moving, and control it from the ground through a special brake and clutch lever.

The vehicle has four speeds forward and reverse. The chassis and the body are of welded and bolted steel fabrication. Turning circle is 27 feet, overall length is 13 feet 11 inches, and over-all width is 6 feet 7 inches.

For further information write to the Linden Equipment Corp., Dept. C&E, Suite 209, 9489 Dayton Way, Beverly Hills, Calif., or use the Request Card that is bound in at page 18. Circle No. 132.

### Rotary compressor mounts on rear of tractor

A complete 600-cfm rotary portable compressor unit for mounting on the rear of a tractor is offered by the Joy

Called the Airvane Model RT-600, the unit is driven through a rear power takeoff. It can also be teamed with a Joy rock drill that is mounted

on the same tractor.

The RT-600 is built as a complete package ready to mount.

For further information write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22. Pa., or use the Request Card at page 18. Circle No. 127.

### Need HOSE in a HURRY?

### Suction • Water • Steam Air · Multi-Purpose Discharge • Pile Driver

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant hipments—no need to stop the job no need to lose profits.

Any time you need hose call Con-mental. You'll like the fast service nd dependable quality you get from e warehouses:

BALTIMORE, Md. CLEVELAND, Ohio

BOSTON, Mass. DETROIT, Mich. CHICAGO, III. MEMPHIS, Tenn.

FIND US FAST

MAY, 1960

PHILADELPHIA, Pa. ST. LOUIS, Mo.



### CONTINENTAL STEAM HOSE

Built for work up to 100 p.s.l., this hose is tailor made with special heat-resistant rubber tube, plies of quality frictioned duck with heavy rubber separation and tough rubber cover. Sizes: ½", ¾", 1", 1¼", 1½", 2". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.



ONTINENTAL RUBBIK WORKS + 1989 LIBERTY ST + ERIE & . PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 350

### Pocket-size receiver is high-powered unit

A high-powered fully transistorized VHF pocket receiver, said to provide reliable communications even in noisy locations, is offered by Motorola.

The new receiver provides 500-milliwatt audio output and is available for operation in the 25 to 54 megacycle and the 144 to 174 megacycle frequency bands—the standard 2way mobile radio channels. Weighing just over 10 ounces, it can be worn in a pocket or clipped to the belt.

This pocket unit operates from either a rechargeable battery or from mercury cells.

For further information write to Motorola Inc., Dept. C&E, 4501 W.



Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 73.

# VIBRATING COMPACTORS



### COSTS DOWN-COMPACTION UP! WITH ESSICK 54" VIBRATING COMPACTOR

CONTRACTOR REPLACES EQUIPMENT WORTH \$67,200 AND DOUBLES PRODUCTION RATE—WITH HIGHER DENSITIES—FEWER PASSES-HIGHER LIFTS

On Texas State Highway 180, Fred Hall & Sons Contractor, were using two Model M tractors, three 10 ton pneumatics, one 3 wheel 10 ton roller, one 50 ton self propelled pneumatic, and one blade to compact crushed limestone with four different clay contents varying from 10% to 15%. They were having considerable trouble getting densities with 2" lifts and many passes of the 10 ton pneumatics, the 50 ton pneumatic on the third lift of 6", and a slushing and final rolling with the three wheel roller to slick off.

Three Essick VR-54 (54") Vibrating Compactors in triplex book-up made two passes on the full six inch lift, with one more fast pass after a water slush to slick off. They got the required density of 140 pounds to the cubic foot, and increased material laid to twice the amount laid before. The three 54" Vibrating Compactors in triplex replaced \$67,200 worth of other equipment—reduced operating costs—and doubled the rate of production.

#### ESSICK VIBRATING COMPACTORS

In any compaction requirement, ESSICK High-Frequency Vibrating Compactors will cut costs, increase production with higher lifts, fewer passes, higher densities, at a greater profit. ESSICK Vibrating Compactors are constantly increasing the profit of thousands of contractors like Fred Hall & Sons and can do the same for you.

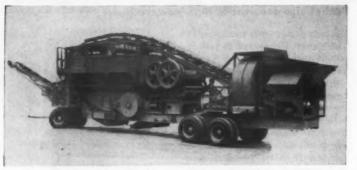


Also 14 Models of Tandem Rollers from  $\frac{1}{2}$  to 14 Tons. SEE YOUR ESSICK DEALER FOR A DEMONSTRATION ON YOUR JOB

### **ESSICK MANUFACTURING COMPANY**

1950 Santa Fe Avenue Los Angeles 21, California

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin



Designed to produce up to four products, including chips and sand, the Giant Gravelmaster has a capacity rating of 400 tph. Conveyors of 36-inch width are features on the feed and delivery system of the unit.

### Portable gravel plant has 400-tph capacity

The Giant Gravelmaster, a gravel plant with matched jaw crusher, improved screening, and wider conveyors for more efficient flow, is available from the Universal Engineering Corp.

The plant is said to be conservatively rated at 400 tph and will produce up to four products, including chips and sand.

The 3-deck 4×14-foot screen provides positive separation and cuts wet or damp material fast. Conveyors of 36-inch width are featured on a feed and delivery.

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The unit is mounted on a rou gooseneck frame with running It is completely portable and report edly meets load limitations of m states.

For further information write the Universal Engineering Cup Dept. C&E, 625 "C" Ave. N. W., Con. Rapids, Iowa, or use the Request Co that is bound in at page 18. Com No. 116.

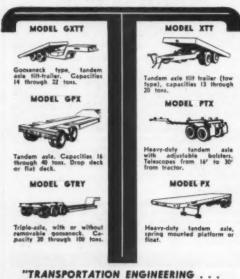




TRIPLE-AXLE MODEL GTX

Positive equalization and distribution of weight on each axle is assured through this exclusive design. Six dual wheels with capacity of 30 through 60 tons. Flat or drop deck. Axles are tubular in type with heavy duty heat-treated alloy steel spindles ground to size to fit heavy duty tapered bearings. All axles are of standard production and have camber for longer tire life.

### A COMPLETE LINE . . . TO FIT EVERY NEED BETTER!



A SPECIALTY!"

TRANSPORT TRAILERS is the profit choice of contractors and movers the world over and is the complete solution to your transportation problem.



For more facts, circle No. 352

### Self-curing repair kit for conveyor belting

A "do-it-yourself" self-curing repair kit for making permanent repairs to conveyor belting and other rubber products without special equipment, highly skilled personnel, or the heat sources usually required for such operations is available from the U.S. Rubber Co.

Known as Holdtite belt repair kit, it consists of various styles and sizes of repair components, such as rubber and fabric-reinforced patches. sheet material, etc.; the simple tools required to do most repair jobs; and an instruction manual.

Holdtite sealing and patching materials are self-vulcanizing compounds that cure quickly to a tough, resilient rubber at room temperatures. The materials offered are said to have high-tensile strength and elongation characteristics, and are extremely resistant to abrasion, butts, tears, and gouges.

For further information write to the U. S. Rubber Co., Dept. C&E, 1230 Avenue of the Americas, New York 20, N. Y., or use the Request Card at page 18. Circle No. 85.

### New plywood component for long-span uses

Trofdek, a new structural building component capable of being used for 50-foot clear spans, is available from Plywood Fabricators Service. Inc.

Said to be particularly suitable for roof structures and concrete forms, Trofdek is a series of fabricated lumber and plywood troughs joined on a 16-inch module. The troughs run parallel to the span and, depending on load, vary in depth from 5% to 151/2 inches. The component is canable of carrying up to 100 times its own weight, according to the company.

Trofdek may be used either as removable concrete forming or as a permanent part of the structure. In either case, reinforcing steel may be laid directly in the troughs.

For further information write to Plywood Fabricators Service, Inc., Dept. C&E, 3500 E. 118th St., Chicago 17, Ill., or use the Request Card at page 18. Circle No. 83.



MOBILE OFFICE Units are low in cost . . Built to your specifications . . . There's a unit to fill your every need. Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

nember, whatever your needs may be, a MOBILE OFFICE Unit be built to fill your requirements.

If It's Mobile . . . We Build It!

MOBILE OFFICE, INC. Phones; DOrchester 3-1048-

7314 Stony Island Avenue, Chicago 49, Illinois For more facts, circle No. 353



MODEL HID (ABOVE)

Gasoline-powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power takeoff for attaching "BERG" flexible

> WIRE OR WRITE FOR DETAILS . .

### "BERG" CONCRETE SURFACERS

For Surfacing: Bridges, Highways, Airport Runways, Dami, Culvert, Floors, Walls.



MODEL A (ABOVE)

#### CONCRETE SURFACING MACHINERY CO. CINCINNATI 32, OHK 4665 SPRING GROVE AVE.

122

The Road Runner reportedly gives 57.5-psi rolling pressure and up to 295 pounds pressure per linear inch of tire width.

### matic-tire roller gives 13-ton compaction

The Model 11WG 11-wheel Road more, a self-propelled pneumatic-ic roller with 13-ton capacity, is miable from the American Steel

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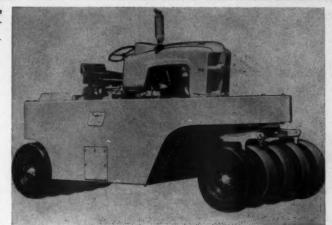
The two center rear wheels are ing-mounted to allow the drive rels full traction and to eliminate centering. A 57.5-psi rolling mere, and up to 295 pounds presper linear inch of tire width, is with this roller, according to the company.

The automotive-type hydraulic ering features a fast turning cycle.

The Road Runner's engine, reversomatic control, torque converter, transmission, differential, and final wheel drive are specifically designed and built to work as a unit: each component complements the other.

Available accessories include water tank systems and new 10-ply 90-psi tires with heavy-duty flat-base demountable rims.

For further information write to the American Steel Works, Dept. C&E, 1211 W. 27th St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 31.



for more facts on these products, circle the indicated number on the quest Card at page 18.

### Yersatile new crane has 65-ton capacity

A large-diameter, wide roller path, ertra-strong king pin eliminate need for hook rollers on the new woc Model 3400-a 65-tonity crane convertible to dragshovel, trench hoe, and clam-

Without hook rollers, overhead derrance heights are reduced as much as 9 inches. In addition, the patry can be quickly lowered without removing the boom, further reducing the overhead clearance height. Other features include torqueconverter drive, independent doublerum boom hoist, box-design crawler ames, one-piece cast car body, and we easy method for jack adjustment d crawler tension.

Optional features include a third run for pile driving or similar jobs, and the independent swing for steel etting or tight maneuvering. A renovable counterweight is handled empletely by the Model 3400 withat jacks, blocking, or other machines tanding by, states the manufacturer. For further information write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manlowoc, Wis., or use the Request Card st page 18. Circle No. 70.



The need for hook rollers is eliminated at the Manitowoc Model 3400, reduc-ing overhead clearance heights as

DRILL MASONRY at Greatest Savings - 50, 60, 70% with NEW Truco Portable Diamond Drilling Equipment

Truco Original Diamond Drill Bits revolutionized masonry drilling by proving savings up to 70%. Sizes ¼" through 20" O.D. Standard lengths 4½" and 12". Other sizes and

TRUCO MASONRY DRILLING DIVISION

Truco equipment often pays for itself in a single day or on a single job.

5 NEW MODELS PLUS

10 NEW FEATURES of use, economy,

Roller base, or base plate or truck mounted models. Drill ANYWHERE

Complete line of engineered, matched

World's cleanest, quietest, thriftiest

Clean, accurate holes 1/4" to 20"

16 MODELS

performance

accessories

Electric, air, gasoline power

POWER COMBINATIONS=

hole drilling. No edge patching.

For more facts, use Request Card at page 18 and circle No. 355

WHEEL TRUEING TOOL CO.

111-3200 W. Davison Avenue



You'll get "tired" in a wink when you use Southern Tire's time-tested 'round-the-clock scheduling for your retreading needs. Fast, efficient pickup and delivery service at your job site . . . after work hours . . . helps you cut costly downtime . . . lick tough schedules. And retreads as much as ½" deeper than ordinary retreads mean longer service for your tires under rugged conditions! Expert workmanship, ultra-modern equipment plus finest quality rubber manufactured to Southern Tire's own specifications guarantee new tire mileage at approximately half of new tire cost!

OVER 75,000 TIRES WORTH OF EXPERIENCE! All sizes from 1100  $\times$  24 to 33.5  $\times$  33.

Always deal with an independent—developers of every major improvement in the industry.

SHEFFIELD, ALA

quest Card at page 18 and circle No. 356



### Rough-terrain truck "swims," climbs walls

A rough-terrain truck that bends in the middle and is capable of climbing over a 3-foot-high wall is announced by the Clark Equipment Co.'s Industrial Truck Division.

Called the Flex-Trac, the 6-wheel truck will traverse a 45-degree slide slope, "swim" across rivers, drive through mud, snow, sand, or marsh-

Three-foot-high concrete walls are no obstacle to the Flex-Trac, Swiss-designed rough-terrain truck being evaluated by the Clark Equipment Co. Unique articulated construction permits the vehicle to raise any of three pairs of wheels off the ground. land, and speed at 56 mph over him ways.

Designed by a Swiss firm, the m chine features a unique articular construction that permits any one the three pairs of wheels-all of the drive wheels—to be raised of the ground. Articulation is controlled b draulically so that the vehicle assume a sway-back position, the front or rear end higher the center, or an arched-back tion with the center wheels of a ground. Either of the positions can be held at an angle of approximately degrees.

The Flex-Trac has unusual tru tion, braking, and steering feature All six wheels can be made to turn together regardless of traction cond tions at individual wheels. Brake action can be applied to all wheel simultaneously by a brake pedal or to the left or right wheels through two brake levers. Thus steering of the machine is similar to that of tracket vehicles.

The drive train of the Flex-Trac consists of a standard 6-cylinder an tomobile engine, a foot-operate clutch, and two gear boxes that pro vide 13 forward speeds and 4 reven speeds.

For further information write the Clark Equipment Co., Industria Truck Division, Dept. C&E, P. O. Bo 31, Battle Creek, Mich., or use the Request Card at page 18. Circle No.

### Paving breaker available for light demolition

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A light-duty paving breaker is as nounced by the Davey Compress

Known as Davey-Holman Mode SS-44, it is in the 48-pound class and suitable for all types of light di molition work.



Features include extra-large allo steel front head, bolts, and sprin that can withstand severe punis ment. The honed cylinder bore is as to increase tool life, as does a rever sible piston hammer.

The Model SS-44 breaker is 22% inches long, 12 inches wide, as weighs 48 pounds.

For further information write the Davey Compressor Co., Dept. Call Franklin Ave., Kent, Ohio, or use th Request Card at page 18. Circ No. 56.

HITTING YOUR DENSITY SPECS? Vibration Can Do it -MODEL CH-31 FASTER, 9-TON IMPACT at Less Cost MODEL CK-10 5-TON IMPACT MODEL CG-10 1 1/2 -TON IMPACT

Get the right unit for your job . . . Only Vibro-Plus can provide the right vibratory compactor to meet any field condition . . . because only Vibro-Plus manufactures a complete line . . . See your distributor.

TRACTOR-DRAWN and SELF-PROPELLED **ROLLERS** • TAMPERS



MODEL CM-15

2.300 LB. IMPACT

MODEL CM-20

6.600 LB. IMPACT

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES! For more facts, use Request Card at page 18 and circle No. 357

fer transport jobs in the 65,000 to 80,000-pound gcw range, the White Model 9000TV tractor features a 235-hp V-8 engine. It is 90 inches from bumper to lack of cab.

### Truck tractor powered by 235-hp V-8 engine

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A tractor with a V-8 engine and numper-to-back-of-cab dimension of only 90 inches is offered by the Truck Division of The White Motor Co.

Designated Model 9000TV, the unit is for transport jobs in the 65,000 to 80,000-pound gcw range. It features a Super Mustang engine that develons 235 horsepower at 3,400 rpm and torque of 412 pound-feet at 2,400 rpm. Available wheelbases of the tractor are 128 to 164 inches, and CA (back of cab to center line of rear axle) dimensions are 66 to 102 inches.

Among standard equipment on the MOOTV are the 530B transmission, 115D front axle with 8,500-pound mied capacity, and 124C rear axle at 20,000-pound capacity.

For further information write to the Truck Division, The White Motor Co., Dept. C&E. P. O. Box 5757. Cleveland, Ohio, or use the Request Card at page 18. Circle No. 96.

### Welding unit available for tractor maintenance

Heavy crawler-tractor tracks, rails, and edges can be resurfaced with only one setup or mounting on the new Twin Track-O-Matic welding unit offered by the Automatic Welding Co.

According to the manufacturer, a 36-foot-long rotating work table holds an entire track-rail assembly, with or without shoes, for any size and type of crawler-tractor tracks. The table, mounted on two trunnions, can be rotated a full 360 degrees by means of a heavy-duty self-lock gear reducer and handwheel, and can be locked at any degree in the circle. This permits accurate angle positioning to resurface the edges of track rails-two edges at a time with the win welding heads.

The rotating table is also said to simplify flux removal and replace-

For further information write to the Automatic Welding Co., Dept. C&E, Airport Road, Waukesha, Wis., or use the Request Card at page 18. Circle No. 15.

### Capacity increases announced for scraper

Capacity of the Caterpillar No. 435 scraper has been increased to 15 cubic yards struck and 19 cubic yards heaped in the new Series D model, according to an announcement made by the company.

Other features of the newer model scraper are: greater flotation because of 20.5×25 front tires and 26.5×25 rear tires; draft-frame improvements that include thicker top and bottom draft arm plates, stronger spreader tube, an improved sleeve joint between draft arms and spreader tube. and substantially stronger gooseneck; increased ejector height and clearance; and higher-strength steel in the pole and axle.

Capacity increases were achieved by redesign of the bowl to permit greater height. The new model scraper is paired with either the new Cat D8 Series H or Cat D7 Series D tractors.

For further information write to the Caterpillar Tractor Co., Dept. C&E. Peoria, Ill., or use the Request Card at page 18, Circle No. 19,

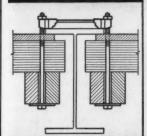
### SUPERIOR HANGERS...

Designed for Fast Erection and Easy Stripping

NEW

FOR STEEL BEAMS AND CONCRETE GIRDERS

**ADJUSTS** FROM TOP OF DECK

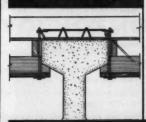


Pres-Steel Hanger

This newly developed Pres-Steel Hanger combines the desirable features of conventional hangers, yet costs less! Assembly is simple, ½" Coil Bolts are passed up through the hanger—no threading is necessary—and a square coil nut is applied. All adjustment is made conveniently from the top of the deck. The foot of the hanger has a saw tooth edge which bites into the flange upon application of a load, preventing any movement of the hanger. The flat top provides even bearing for the nut and the bolt hole is so formed that there is no binding of the bolt on removal. Pres-Steel Hangers are also made to take the bolt or coil rod at 45°.

These economical hangers have a safe working load on steel beams of 8,000 lbs. (ultimate capacity 14,500 lbs.). On concrete girders the safe working load is 6,000 lbs. (ultimate capacity 9,000 lbs.).

**ADJUSTS** FROM TOP OF DECK





### Prescon Hanger

This unique hanger provides hanging points cantilevered away from the concrete girder sides. The forms are hung from coil bolts threaded into heavy square coil nuts bearing on the top plate. Provision is also made for haunch forming above the girder. Adjustment is made conveniently from the TOP of deck. Simultaneous overhanging slab or curb forming is accomplished with coil rod and wing nut at 45°. Available in two types—6M (6,000 lb. safe working load) and 10M (10,000 lb. safe working load). The use of Prescon Hangers on concrete girders eliminates hazardous, makeshift methods.

OTHER SUPERIOR HANGERS FOR HANGING FORMS ON BRIDGE SUPERSTRUCTURES

**Haunch Coil Hanger Frame** At High





SUPERIOR CONCRETE ACCESSORIES, INC. 9301 King Street, Franklin Park, Illinois (A Suburb of Chicago)

New York Office 39-01 Main St.

New CATALOG 700

WORKING PARTS

For more facts, use Request Card at page 18 and circle No. 358



Worthington's Blue Brute 900-cfm portable rotary compressor with "over-under" design.

#### New portable compressor is 900-cfm machine

The Worthington Corp. has introduced a new Blue Brute 900-cfm portable rotary compressor. The unit's "over-under" design puts the second-stage compressor cylinder directly under the first stage, providing the benefits of accessibility, easy maintenance, and self-draining of compressor oil.

The compressor's automatic control stops the engine in case of high discharge air temperature, overheating of cooling water, or low engineoil pressure. The interlock control feature of the clutch prevents engaging the clutch while the engine is running, and the cutout switch prevents starting the compressor with air pressure in the air receiver.

For further information write to the Worthington Corp., Dept. Car. 37 Appleton St., Holyoke, Mass., a use the Request Card at page 12 Circle No. 76.

# specify **MOBILE**hydraulic powered DRILLS for speed, power, economy...





### MARKY

It's the only diamond coring machine designed and built specifically for production-type concrete test coring on highways, aircraft runways and other slab-type masonry structures. Also available without custom-built trailer for mounting on ¾ ton utility truck.





Production type earth auger bores holes for utility poles, guard rails and similar installations with lightning speed.



B-40 EXPLORER

Lightweight B-40 core drills to 250' and augers to 100'. It's a natural for diversified soils exploratory work and all-round utility.





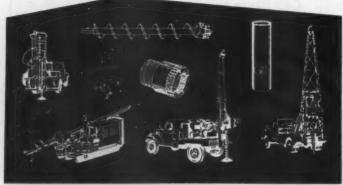
### MARK IV

Diamond masonry drilling machine has exclusive automatic hydraulic feed. It's lightweight, portable, easy to use.

Mobile offers a complete line of hydraulic rotary drilling machines, soil sampling equipment, diamond masonry coring machines, diamond bits, drilling tools and equipment.

#### MOBILE DRILLING, Inc.

960 N. Pennsylvania Street • Dept. 23 Indianapolis 4, Indiana



For more facts, use Request Card at page 18 and circle No. 359

### Bulk-material hauler in lengths to 15 feet

Suitable for windrowing cement and lime material at the job site, the Model C is available with capacities from 50 to 80 barrels.



The Highway Equipment Co. announces the Model C bulk-material hauler for use in transporting and unloading virtually all materials of fine granular consistency. It is suitable for windrowing material used in soil-stabilization road work.

Four different body lengths are available—8, 11, 13, and 15 feet—with capacities from 50 to 80 barrels. A 30-inch, heavy-duty, 4-ply rubber

belt-over-chain conveyor assures a smooth flow of material to the discharge hopper. The screw jack allows precision setting of the feed gate.

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The Model C is available as a power-takeoff or engine-driven unit.

For further information write to the Highway Equipment Co., Dept. H20, Dept. C&E, 616 "D" Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 128.

# Free GRACO IDEA BOOK ON CONVOY LUBE UNITS!

- Illustrates latest Graco Convoy Luber equipment.
- Shows typical luber layouts with detailed diagrams.
- Provides complete specs on Graco field luber units.
- Lists dozen of accessories for convoy luber work.

DESIGN YOUR OWN LUBE SERVICE TRUCK, fully equipped with grease, oil and air components you need! Get complete information from Graco's new Convoy Luber book—28 big pages that tell you how to do it the best and quickest way.

See how to "job-plan" your Convoy Luber in six easy steps . . . get valuable charts, diagrams and specifications . . . learn about the latest Graco pumps, hose reels, and other

GRACO

equipment that will make your lube truck the best on the road.

SEND FOR YOUR COPY of Graco's Convoy Luber handbook today—it's a valuable free guide you'll want to read from cover to cover!

GRACO

GRAY COMPANY, INC.
547 Graco Square • Minneapolis 13, Minnex
(See phase book yellow pages "Lubricating
Devices" for Graco Suppliers)

more facts, use Request Card at page 18 and circle No. 360

An impact breaker with grizzly feeder is available from the lowa Mfg. Co. The addition of the Simplicity feeder to the Cedarapids Model 3645 portable double-impeller impact breaker combines into one compact unit a grizzly to bypass fines and under-size material, and a feeder that assures a positive uniform flow of material. Only material requiring primary reduction is allowed to pass into the breaker chamber. In addition, the grizzly feeder is

designed to prevent rock from jamming, and a vibrating unit keeps the rock in constant forward motion at a uniform rate. For further information write to the lowa Mfg. Co., Dept. C&E, 916 16th St. N.E., Cedar Rapids, lowa, or use the Request Card at page 18. Circle No. 49.



### Automatic welding hardsurfacing flux

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> autoflux H-950, an inert automatic velding flux for use with automatic erged-arc hardsurfacing wires, is sable from the Hobart Bros. Co.

> According to the manufacturer, the for is truly inert and will not cause complicated alloying effects with the deposited weld metal. Hardness, ducwilly, and work-hardening characteristes of the weld metal will be determined by the alloying content of the vires only when using this flux.

For further information write to the Hobart Bros. Co., Dept. C&E, Hebart Square, Box 8129, Troy, Ohio, or me the Request Card at page 18. Circle No. 128.

### Motor-in-head vibrator is a 180-cycle unit

The Champion Mfg. Co. has introduced a new 180-cycle motor-in-head fexible-shaft vibrator.

The unit is available with a 21 or 15-inch head and a removable steel or rubber nose or a fixed steel nose. It is equipped with a 10-foot handling hose to which extensions can be dded in 10-foot sections.



Other features include a 1½-hp high-cycle motor in head; removable motor and eccentric sections; and waterproof switches and connections. The company points out that motor-in-head servicing is minimized because the motor has no brushes or commutators. The units can be left running out of the concrete mix for several hours without damage to the vibrator motor.

For further information write to the Champion Mfg. Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 30.



When this photograph was taken, 8,000 yards of right-of-way had been cleared of trees, and the roadbed was being prepared for surfacing.

### "Sinclair Helped Cut **Maintenance Costs** On Every Mile of Our **Northway Section"**

says J. Hanna, Superintendent, D. A. Collins Construction Company

The Northway, another link in the nation's grid of superhighways, connects the New York State Thruway with the Canadian border. Mr. Hanna says, "Our heavy-duty equipment took the toughest kind of punishment on this project. Work ranged from ripping out trees to building bridges. Yet our maintenance costs were far below what we anticipated. Much of the credit must go to Sinclair's service and their high quality fuels and lubricants. They kept our equipment operating at peak efficiency . . . on schedule. These are reasons enough why we use Sinclair Products exclusively."

If you haven't discovered the cost-cutting possibilities of Sinclair services and products, see your local Sinclair Supplier or write Sinclair Refining Company, Contractor Sales Dept., 600 Fifth Avenue, New York 20, N. Y.

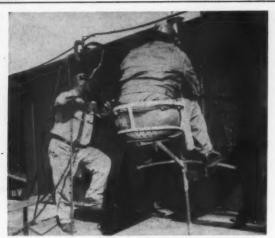
### Sinclair **Fuels and Lubricants**





Mr. Hanna reports, "The portable trailer tanks Sinclair loaned to us contributed greatly to the speed and efficiency on our section. We were able to refuel on the job . . . fast, and keep our equipment working full time."

For more facts, use Request Card at page 18 and circle No. 361



Safety, convenience, and ease of adjustment are three noteworthy features of a new tubular-steel sulky for the use of welding operators on bridge girders and other overhead structures. The telescopic sulky comprises a simple pressed-steel perforated seat protected by a 9-inch-high circular rail of steel strapping. The seat is supported by welded steel scaffold tubing that carries a curved tubular footrest. The entire assembly rides a tubular-steel mast, which is hung on a bracket straddling the top flange of the girder. The mast is punched at 12-inch intervals to permit the sulky to be pinned to it at any level. For further information write to the P. H. Mallog Co., Dept. C&E, Niles, Ohio, or use the Request Card at page 18. Circle No. 6.

### **Water Problems?**

- Dewatering?
- Water supply?
- Sprinkling?
- Tunneling?
- Gravel washing?
- Construction?
- Road paving?
- Other?

### **BARNES** pumps more for less!



Rugged, dependable Barnes Self Primers have Direct Flow Suction, Super-Seal design — dozens of addesign — dozens of advanced features for faster priming, more efficient pumping, longer trouble-free pump life. Sizes, capacities, drives to solve every water handling problem. Call your Barnes Distributor or write—

BARNES MANUFACTURING CO., Mansfield, Ohio, Oakland 21, Calif.

Guaranteed to meet the standards of

For more facts, circle No. 362



For uniform deposit of material. The nationally known chip and stone spreader with the exclu-sive Burch dual feed gate for material depth

The standard tool for heavy matting and seal coating, forward or backward spreading.

Write today - ask for the complete data.



Title

State.

Please send complete information on the Burch Force Feed Spreader.

Street \_

For more facts, use coupon or circle No. 363

### Semiautomatic wire for strength welding

An open-arc semiautomatic wire that can be used for strength welding, rebuilding and, in certain cases, hardfacing, is announced by the Stoody Co.

Designated Stoody 110, it has a tensile strength of 124,000 psi and a yield point of 107,000 psi, with a 23 per cent elongation in 2 inches. It is said to be particularly suitable for use on parts subjected to heavy loading. The company recommends it as a final overlay on equipment where impact values are too high for regular hard-metal applications.

An important feature of this material, on such applications as crushers, is the fact that Stoody 110 may be repeatedly deposited over itself without difficulty or danger of spalling. There is no need to wait until the previous application is completely worn away before rebuilding again.

For further information write to the Stoody Co., Dept. C&E, 11904 E. Slauson Ave., Whittier, Calif., or use the Request Card at page 18. Circle No. 38.

#### **Tabletop copying machine** handles 42-inch widths

The Revolute Rockette, a new tabletop dry-diazo copying machine, has been announced by Paragon-Revolute, a division of the Charles Bruning Co., Inc.

The machine makes copies of drawings, tracings, or printed matter up to 42 inches wide and of any length. A single knob controls the copying speed, which can be set for a maximum 15 linear fpm.

The unit is 22 inches high. It is housed in a sturdy 16-gage steel cabinet, and a matching 35-inch-high floor stand is available.

Employing a 1.500-watt quartz mercury vapor lamp, the new machine operates on a 200-volt single-phase 60-cycle current.

For further information write to the Paragon-Revolute Division, Charles Bruning Co., Inc., Dept. C&E. 1800 W. Central Road, Mount Prospect, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 115.





On this Massey-Ferguson Work Bull Multi-Purpose Loader, a FUNK Revers-O-Matic Drive permits triple operation with two foot pedals. Speed and direction are changed instantly and smoothly, hands are left free for other operations and neutral speed control is provided.

The FUNK torque converter automatically adjusts power between speed and load requirements.

It makes good sense to look for FUNK Modular Power Units on the equipment you buy.

MFG.

For more facts, circle No. 364

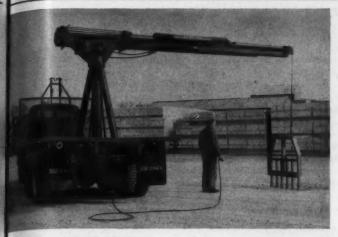




Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U. S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply . . positive in action. Write for illustrated folder, today.

The Black Brothers Co., Inc., 910 4th St., Mendota, Illinois

For more facts, circle No. 365



Sde-O-Matic Model T unloader is ned for tandem-axle rigs accommong loads of 8, 10, 12, and 14 cubes, or front mounting behind the cab.

### Versatile unloading unit od for tight work

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NGINEERS

The Model T unloader is offered by side-O-Matic Unloader Corp. The unit's 17-foot boom travels and or backward and will rotate demously in either direction as he had is raised or lowered. Operamay be performed simultaneor independently.

Thee unloaders are available for n-axle trucks and trailers acnodating loads of 8, 10, 12, and states, or for front mounting bend the cab if desired.

Cubes or pallets can be spotted edily and accurately in any tight tion without damage to the ds. Materials can be unloaded ough doorways, around walls, or the bottoms of excavations. The ustable self-balancing fork can be ickly set to handle all sizes of k and brick cubes, palletized maals, or mixed loads of cubes and ets of different sizes.

A Bickerstaff gripper-type block or ck fork is optional equipment.

For further information write to Side-O-Matic Unloader Corp., L CAE, P. O. Box 1561, York, Pa., the Request Card at page 18. No. 13.

### lable sealant compound waterproofing

Bond No. 1007, a permanently e sealant compound based on tol free-flowing liquid polysulfide ers, is available from the Internal Epoxy Corp.

According to the manufacturer, compound cures to a tough rubrike seal that will not shrink, ck, oxidize, or become brittle. emically inert, it resists acids, halies, and solvents. It is said to and solvents. It is said to and glass, metals, masonry, or wood o virtually any surface and remains naffected by severe temperature

For further information write to he International Epoxy Corp., Dept. AE, 501 N.E. 33rd St., Fort Laudertie, Pla., or use the Request Card st page 18. Circle No. 112.

### Asphalt-paver device gages course thickness

A gage to measure asphalt course thickness, which can be installed on all Miller towed pavers and is now original equipment on the firm's new spreaders, is available from the Miller Spreader Corp.

By simply setting the screed adjustment screw to the level pointed out by the thickness gage indicator needle on the built-in setting dial, the operator knows immediately the thickness of the asphalt from the start of the job. Adjustments can be made efficiently and easily to meet paving conditions.

For further information write to the Miller Spreader Corp., Dept. MS-



308-2. Dept. C&E. 120 Pike St... Youngstown, Ohio, or use the Request Card at page 18. Circle No. 67.

### You hear it all around the country...



### "We eliminated customer complaints"\*

### with Johns-Manville Placewel-the quality admixture

When contractors no longer complain about harsh, segregated mixes, the ready mix operator knows these buyers have become steady, satisfied customers.

And that's just what's happening everywhere today. Smart ready mix men are adding J-M Placewel® to their mixes and giving their customers concrete that is—

- free from honeycombing, sand strenking and segregation

Engineers and architects, too, know the value of liquid Placewel. Every day more and more of them are specifying Placewel for "quality" concrete. Construction and maintenance costs are reduced while concrete strength goes up as much as 30%.

One handy 55-gallon drum will treat 600 cu/yds. of concrete. Let a Johns-Manville Concrete Technologist demonstrate the big quality and profit story that Placewel holds for you. For his location, write Johns-Manville, Box 14, New York 16, New York.

"We eliminated customer complaints when we started using Placewel," say these successful ready mix operator

E. E. Newman-President Abbott & Newman, Inc., Fort Worth, Texas Robt. Simmons—Plant Supt. Bay Concrete Industries, Tampa, Florida T. E. Snure-Materials Engineer Cooney Bros. Inc., Tarrytown, New York W. C. Wilson, Sr.—President E. A. Wilson Company, Lowell, Mass.

JOHNS-MANVILLE





#### Small patching device for asphalt pavement

The Hot Witch roller, a small asphalt-pavement patching device, is announced by the Charles Machine Works, Inc.

Propelled by hand, the Hot Witch uses the principle of heat in applying patches in asphalt paving, both cold and hot-mix. It has the advantage of providing a method for smoothing patch spots, sealing the surface, and bonding to the surrounding area.

It consists of a heavy roller, inside of which is a propane-fired heater

capable of heating the roller between temperature of 800 degrees in a minutes' time. A 20-pound between propane mounted on top of the chine provides 6 to 8 hours' fuel heating the roller.

Operation of the Hot Witch quires no particular skill,

For further information with a the Charles Machine Works, he Dept. C&E, 1959 W. Fir Ave., Pen Okla., or use the Request Card a page 18. Circle No. 82.

### Trencher for small jobs offers speeds to 12 fpm

The Brown Mfg. Co., Inc., has available a new and larger model of its Bus Brown trencher.

Designated Model 468R, the new trencher offers variable trenching speeds up to 12 fpm and will dig ditches up to 12 feet wide.

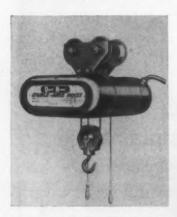
Powered by a Wisconsin 12-hp engine, the machine is also equipped with a hydraulically controlled digging boom that can be raised to an upright position. Self-propelled, the unit drives on all four wheels while digging and on rear wheels while in transport gear.

For further information write to the Brown Mfg. Co., Inc., Dept. C&E, Woodbine, Iowa, or use the Request Card at page 18. Circle No. 51.

### Cable-type air hoist needs minimum headroom

Hoisting close to overhead supports and handling loads close to walls and building structures are possible with the new David Round Cable-Aire hoist.

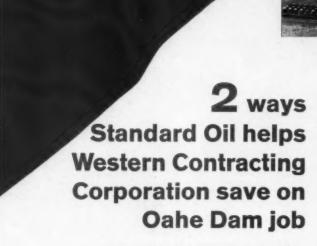
Powered by a rotary-vane explosionproof air motor, and with com-



plete protection against burn-out from overload, the hoist is said to meet all requirements for operation in hazardous atmosphere. A control valve automatically returns to neutral upon release of a rope pendant. An upper-limit safety also returns the control valve to neutral.

Standard lifts of 20 and 40 feet with variable speeds are offered in capacities from ¼ ton to 2 tons.

For further information write to David Round & Son, Inc., Dept. C&E, Box 198, Cleveland 39, Ohio, or use the card at page 18. Circle No. 98.



In eight years on project, 10 million gallons of diesel fuel and gasoline have been delivered on time and when needed Saving No. 1 F. L. "Red" Napple, Standard of staff engineer, and Standard Oil agent Bob F man have been serving Western on the Oil Dam project since the first dirt was moved 1952. This means continuity of service that ohe invaluable to a contractor Red Napple is an engineering degree plus more than 13 year experience in just this kind of work. Wester thus has the equivalent of another engine helping them Napple is located at Aberdena Friman at Pierre, both only a few miles for the job. Western works around the clock is does Standard. Bob Friman and his men mideliveries 24 hours a day, winter and summe Western never has equipment down while waiting for deliveries of fuels, lubricants or great

Saving No. 2 Western uses only quality product -Standard's Diesel Fuel, Standard RED CONT



the roller degrees in pound botto top of the hours' fuel for

### 3-axle trailer comes in two models

nhert Trailers, Inc., offers a new

Hot Witch

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skill.

rear bridge height.

The trailers are available in drop

pension, cast spoke wheels, air vacuum brakes, lights, reflectors, directional signals, six lash rings, four pipe pockets, longitudinal flooring. and rear loading ledge.

A removable gooseneck is offered on drop-deck models only. Payload capacities are rated from 70,000 to 100,000 pounds.

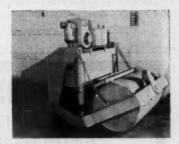
For further information write to Talbert Trailers, Inc., Dept. C&E, 7955 W. 47th St., Lyons, Ill., or return handy Request Card that is bound in

### Announce new roller for motor graders

A new, improved version of the Martin Co.'s GraderrolleR, the Model GR-42HG, featuring an independent, gasoline - engine - driven hydraulic pump, is announced by the firm.

A general-use road-surfacing roller that attaches to the rear of motor graders, the GraderrolleR is said to handle easily most compacting-rolling duties, and is available at any time the motor grader is available.

The unit features a Wisconsin Model BKN single-cylinder air-cooled



gasoline engine on the top of the roller frame. Developing 7 horsepower at 3,600 rpm, the engine is connected directly to the hydraulic pump-a Barnes rotary gear pump with 6-gpm capacity at 1,500 psi.

Raised and lowered hydraulically, the GraderrolleR uses the weight of the grader to exert up to 225 pounds of compaction per linear inch of its 42-inch-wide roller. The roller is pivoted at the center and follows the road surface regardless of the grader's position during operations. Remote controls allow full operating adjustments to be made from the grader operator's platform.

The entire 2.000-pound unit attaches to the rear of the motor grader where the tandem wheels can evenly distribute the full weight.

For further information write to the Martin Co., Dept. C&E, 620 Andrews Ave., Kewanee, Ill., or use the Request Card at page 18. Circle No. 133.

### **Ammonium-nitrate pellets** improve blasting results

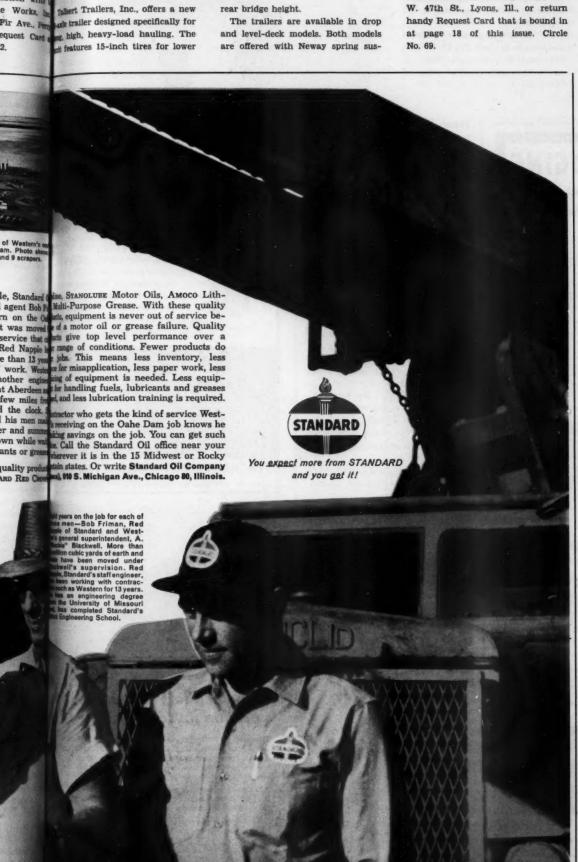
Ammonium nitrate in a new pellet form said to increase the economy and effectiveness of blasting is announced by the Explosives Division of the Atlas Powder Co.

These pellets are said to be of optimum size and shape for better control over bore-hole density and oil absorption. Their porosity allows them to readily absorb sensitizing agents such as fuel oil, states the company.

Atlas pellets are available in 50 and 80-pound moisture-resistant bags. The pellets flow freely and may be field-mixed by any method.

For further information write to the Explosives Division, Atlas Powder Co., Dept. C&E, Concord Pike and New Murphy Road, Wilmington 99, Del., or use the Request Card that is bound in at page 18 of this issue. Circle No. 54.

←For more facts, circle No. 367



### Improved track-pin press for small tractors

A new, improved track-pin press for servicing tracks on small crawlertype tractors is announced by the Owatonna Tool Co.

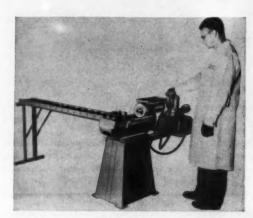
Operating time required for removing and replacing pins and bushings reportedly has been cut considerably by the Y360-A press, which incorporates a new 35-ton singlecylinder double-acting ram, and the firm's Vanguard Y-26 Series 2-stage hydraulic pump.

The press frame and ram assembly are mounted on a sturdy base and can be easily transported

To facilitate handling of track, 5foot sections of track roller conveyor. which may be bolted together to any desired length, are available.

The press requires floor space of 40×16 inches without roller conveyors. It stands approximately 32 inches high.

For further information write to the Owatonna Tool Co., Dept. C&E. 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 91.



track-pin signed to hand used on John De Case, and Oliv

### BAILEY BRIDGING

is your answer when time counts FOR FAST ERECTION



Unskilled labour can quickly assemble the standard bridging components. Bailey Bridging is the ideal answer for emergency or rush schedules to provide temporary or permanent bridging.

#### QUICK LAUNCHING



Using a simple cantilever system, the bridge is quickly moved across the river. Can be decked with timber supplied locally or with special steel decking.

#### AND CLOSING THE GAP!



In record time — a bridge like this appears and immediately begins to carry traffic across former barrier. Such an economical method of spanning rivers, valleys and gorges is a major factor in opening remote territory for the tourist, mining and lumbering industries.

### CONTRACTORS SERVICE LTD.

38 Commercial Road, HU. 5-4424, Toronto, Ont.

For more facts, circle No. 368

### New, improved pipelayer has more lift capacity

A new integrally designed pipelayer capable of 12,270 pounds more lifting capacity than its predecessor has been announced by the Caterpillar Tractor Co.

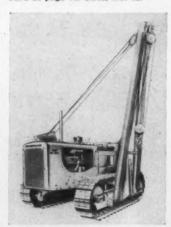
Designated No. 561 Series B. the unit will replace the MD6 pipelayer, the company states. Maximum lift capacity of the No. 561 is 38,800 pounds at 4-foot overhang with 5,000pound adjustable counterweights. Two other stationary counterweight groups are available. One weighs 2,500 pounds; the other 3,500 pounds.

The No. 561 Series B is powered by an all-new compact engine that delivers 93 flywheel horsepower. Controls on the machine permit short. direct arm movements by the operator. Steering clutches are hydraulically boosted; a forward-reverse lever and conveniently located gear-shift lever permit quick arm movements in selecting speed and direction of

Standard boom length is 15 feet; optional booms of 12.5 and 18 feet are available.

Boom and load lines have three lift speeds and one for lowering. Lift speeds are 102 fpm in first gear, 177 fpm in second gear, and 723 in third gear. Lowering speed of the equipment is 102 fpm.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 46.



features a maximum lift capacity of 38,800 pounds, and is powered by a 93 flywheel-horsepower engine.

### SPEED SENSITIVE SWITCHES

MODEL GO

That can be furnished to trip a any given speed between 38 and 6000 R.P.M.

These switches have single pole double throw, snap-acting co tacts rated for 10 Amps at 115 V.A.C. A variety of dust cover and electrical connectors or available if exposed termi are undesired.



SYNCHRO-START PRODUCTS, INC. 8151 N. RIDGEWAY AVENUE . SKOKIE, ILL.

For more facts, circle No. 369



### ...for asphalt and aggregate spreads up to 8-inch depths

Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphal, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "It ing" strike-off bar with new crown adjustment, m on runners independent of the roller and hopper.

Can be hitched to practically any standard size or m dump truck in seconds. For further information w



CONTRACTORS AND ENGINE



Storage compartments of the Reading utility bodies have been increased in length and lowered to complement the new Chevy and GMC truck design.

### Three hand-tool sets for variety of work

Three new versatile hand-tool sets are announced by the Owatonna Tool Co.

The largest set, No. 100-B, contains 94 tools, including a range of sockets for covering a variety of work from ignition and carburetor operations to heavy jobs on trucks and tractors.

A utility set, No. 102-B, contains 64 tools especially selected for everyday automotive maintenance work.

No. 103-B is a set of 42 tools selected for general maintenance work.

For further information write to the Owatonna Tool Co., Dept. C&E,



381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 10.

### New utility bodies for 3/4-ton chassis

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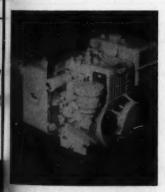
Reading Body Works, Inc., annumces a new series of utility bodies in the 1960 Chevrolet and GMC 34ton chassis.

Called the 964 Series, these bodies essure 96 inches in over-all length conform with increased cab-toatle dimensions of these makes. A bwer center of gravity increases roadshility and maneuverability for the entire vehicle, states the manufac-

Also featured are adjustable and removable dividers and removable shelves in the weathertight storage compartments. The bodies are electrically welded into one integral unit. For further information write to the Reading Body Works, Inc., Dept. CME. 420 Gregg Ave., Reading, Pa., or the Request Card at page 18. ele No. 92.

### **lf-priming pumps** sature light weight

le Mercury announces two lightweight self-priming pumps. Both models, the 5M and 7M, have -cycle engines with automatic recoil starter, oil-bath air cleaner, suction strainer, shock-absorbing rub-



mounts, convenient carrying hande replaceable wear plate and iron volute, and an impeller design that is said to keep the seal free of debris and dirt.

The Model 5M, a 11/2-inch 42-pound unit, offers 3 horsepower and will pump more than 5,000 gph; the 7M, with 2-inch suction and discharge, pumps more than 7,000 gph.

For further information write to Pacific Mercury Mfg. Corp., Dept. CAE, 13232 Leadwell, North Hollywood, Calif., or use the Request Card that is bound in at page 18 of this imae. Circle No. 9.



AUTOMATIC SAFEGUARDS KEEP ROTARIES ON THE



Let's face it . . . a portable compressor in the field takes a beating. The most reliable compressor you can buy is the one that is built to protect itself. That's why Joy has done everything possible to make operation and maintenance simple and automatic. Some examples: The built-in blow-down valve, the fail-

safe safety circuit, the automatic drain and the thermal bypass valve. When the compressor stops operat-ing, the receiver blows down automatically. This eliminates the possibility that the operator will forget and try to start the machine under load.

All portables have a safety circuit, but on most of them a broken wire will make the circuit inoperative. On Joy rotaries, the compressor cannot be op-erated unless the safety circuit is com-plete and working perfectly—eliminating a possible source of major compressor damage.

Every Joy rotary has an automatic drain system designed to prevent hy-draulic lock. Standard equipment also includes a thermal bypass valve which prevents dry starts and eliminates moisture condensation.

Even common items like the oil filter

Even common items like the oil filter have been given special attention. Instead of a filter that requires cleaning periodically, Joy rotaries have replaceable element filters—just put in a new element whenever you change oil.

The load control is as simple as possible. You just turn the knob on a cali-

brated dial to set the pressure you want.
Foolproof features like these are

standard factory equipment on all Joy rotary portable compressors—a complete line from 125 to 900 cfm.



JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA









Joy Manufacturing Company Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Com (Canada) Limited, Galt, Ontario



Navco rappers are said to eliminate most of the maintenance problems on precipitators and dust collectors.

### Pneumatic "rappers" for dust collectors

A new line of Navco air "rappers" for electrostatic precipitators and dust collectors is announced by the National Air Vibrator Co.

According to the manufacturer, these rappers feature a patented onepiece design that eliminates a high percentage of maintenance problems on precipitators and dust collectors. There are no assembly bolts to stretch and shear, and no separate striking plate to leak air from the housing.

Exhaust parts on both sides of the housing keep the vibrator piston centered, so that housing wear is eliminated.

Navco rappers can be arranged with a solenoid valve and timer for complete automatic control. They are made for vertical mounting (Model BH-3) or horizontal mounting (BH-3-SP). Units measure 101/2 inches long, 5 inches wide, and 9% inches high; they weigh 52 pounds. Air consumption at 50 psi is 9 cfm.

For further information write to the National Air Vibrator Co., 2372 W. Seventh St., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 8.

For more facts on the products described in this section, circle the indicated number on the Request Card bound in at page 18.

#### Add double pumps to vane-type line

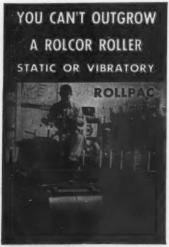
Double pumps have been added to the Vickers line of vane-type hydraulic pumps. These units extend the range of application by providing one power source for two separate hydraulic circuits or greater volume through combined delivery of both sections. They are designed for normal operation at speeds to 2,000 rpm and pressures to 2,000 psi.

A wide variety of ring sizes available in each section of the double

pump offers a selection of capacity ranging from 8 gpm in the small me tion to 77 gpm in the large section.

Quick-change pumping cartridge convenient 4-position inlet, and 4-bet SAE flange connections are other features.

For further information write in Vickers, Inc., Dept. C&E, P. O. But 302, Detroit 32, Mich., or use the Request Card that is bound in at pas 18. Circle No. 93.



Whether your job is . . .

Crease relling... Driveways... Parking lets... Patching... Tonnis courts... Sed relling... Maintenance... you won't outgrow the usefulness of a Relipoc.

That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on your job will prove to you why Rollpac is the top selling one-ton roller in the United States.



Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE



ROSCO MANUFACTURING CO. ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, M

For more facts, circle No. 372





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#### ENGINEERS MAY, 1960

### Crawler-type trencher does own backfilling

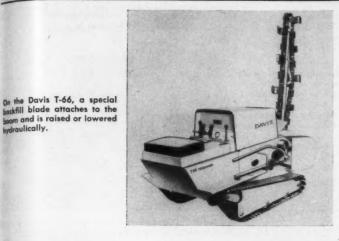
A new crawler-type trencher and backfill machine, the Model T-66, is announced by Davis Mfg. Inc.

The trencher features positive traction, hydraulic variable-speed drive, and instant forward and reverse. It digs 3 to 4 inches wide, down to 66 inches deep; or 12 inches wide, to 30 inches deep; and at varying widths and depths in between. Trenching speed is from 1 to 12 fpm. The unit is powered by a Wisconsin 121/2-hp air-cooled engine.

According to the manufacturer, the complete operation is controlled from the operator's seat.

The T-66 is designed to do its own backfilling. A special backfill blade attaches to the boom and is raised or lowered hydraulically. It can be positioned at the center point for direct dozing and angled to the left. It can also be set in an offset position, angled to the left, to peel the spoil back into the trench while running parallel to it. Backfill and transport speed is approximately 2 mph.

For further information write to Davis Mfg. Inc., Dept. C&E, 1500 S. McLean Blvd., Wichita 13, Kans., or use the Request Card at page 18. Circle No. 110.





### Jay Tampers cut compaction costs "at least 90%" at Air Force Academy

For more facts, use Request Card at page 18 and circle No. 375

Insist on

More than 100 Jay Tampers were used by contractors who built the huge Air Force Academy at Colorado Springs. One of them, C. Wallace Plumbing Co., inc., of Dallas, reports:

"Jay tampers reduced our compaction costs at least 90%. Dollar for dollar, they're the best equipment investment we ever made."

Savings on such jobs as the Inter-ate Highway Program and the Niagara Power Project are similar. In one

Plan Your Future NOW!

HAND

STARTING

GENERATOR

ROLLERS

COMPRESSORS

TROUBLE

FREE

case, the cost per cubic yard was cut from \$2.68 to 12c.

Even greater savings are now available with Jay's new models, which tamp harder, faster, better on all soils and blacktop. Improvements include stepped-up power, new handles, and a new trailer for easy transport.

See your Jay dealer for a free demonstration, or send for new Catalog J-O. Jay Company, Division of J. Leukart Machine Co., Inc., 2226 South Third Street, Columbus 7, Ohio.

tampers

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

### Tooling, repair compound for damaged machinery

The Devcon Corp. has available a new epoxy tooling and repair compound. Two types are available: Devcon 100, a puttylike material, and Devcon 101, a liquid.

Both materials reportedly have good tensile and compressive strength, resist most chemicals and oils, and will bond to all types of metals, wood. and other materials. Devcon is used for repairing damaged machinery and for other applications where high strength and light weight are important factors.

For further information write to the Devcon Corp., Dept. C&E, Danvers, Mass., or use the Request Card at page 18. Circle No. 43.

for all your equipment

LONG

LIFE

LOW FUEL CONSUMPTION

ADAPTABLE

ister DIESEL POWER

PUMPS -



"ON THE JOB WHEN YOU WANT THEM!"

STEEL and WIRE ACCESSORIES for Fast

FIREPROOFING

of Structural Steel



RIGID BEAM CLIP

5' lengths - installed with lightning speed. Made of #12 or #10 gauge galvanized.

### HAUNCH STIFFENER

for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.





### TOGGLE HANGERS

More rigid than any wire. Used in conjunction with

SYLGAR SNAP-ON HAIRPINCLIP

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel



STEEL & WIRE CORP.

79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS · SPECIAL COLUMN CLIPS EXPANSIBLE CLIPS

STRAIGHT AND COIL WIRE

HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 377

Distributorships available in a LISTER-BLACKSTONE, Inc.

Model SL3, 12-3/4 BHP 1800 RPM

AIR-COOLED DIESEL POWER AVAILABLE FROM 3-1/2 BHP TO 36 BHP WRITE FOR COMPLETE DETAILS

### New backfill tampers give more compaction

Three new Sand Wiper hand-held backfill tampers, which reportedly produce desired compaction density on higher lifts than formerly possible with hand-held tools, are offered by Ingersoll-Rand Co.

Power blows are doubled over previous designs. A wide selection of optional butts and peens is available for special requirements.

The Size 241 Sand Wiper backfill tamper, including butt, is 52¾ inches long and weighs 267% pounds. Cor-

responding specifications for Sizes 341 and 441 are 52% inches long, 37% pounds; and 50% inches long, 47% pounds, respectively. All three models are equipped with lever throttles and have %-inch pipe tap hose connections for use with the recommended ½-inch hose.

For further information write to the Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 61.



The Sta-Pac, a 2-ton roller for construction and maintenant work, provides compaction up to 74 psi.



### MUST HAVE

DEPENDABLE MECHANICS

UNIVERSAL JOINTS



Your dependable high grade machines deserve MECHANICS Roller Bearing UNIVERSAL JOINTS dependable high quality. And now you can benefit from the protection and convenience of "once-a-season" or "lifetime" lubricated

sealed in that dirt and moisture cannot enter. Let our engineers show you how this dependable MECHANICS Roller Bearing UNIVERSAL JOINT will give your machines competi-

roller bearing universal joints so tightly

"lifetime" lubricated Export Sales: Borg-Warner International 36 So. Wabash, Chicago 3, Illinois

### MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner . 2030 Harrison Ave., Rockford, III.

For more facts, use Request Card at page 18 and circle No. 378

### Roller's weight varies from 1 to 2 tons

The Sta-Pac, a new 2-ton roller, is offered by the Rolcor Division of the Rosco Mfg. Co.

Exceptionally maneuverable, the machine has a variable weight from a net of 2,100 pounds to a working weight of 4,000 pounds. It also features a 40-inch roller of 26-inch diameter and front and rear sprintler bars. Power is supplied by a 9-in engine with a 12-volt starting system and generator.

The Sta-Pac provides compaction up to 74 psi.

For further information write to the Rolcor Division, Rosco Mfg. Co., Dept. C&E, 3118 Snelling Ave., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 29.

### Batch plants designed for easy towing

The new Heltzel unitized 100 and 150-ton push-button batching plants have built-in wheels and towing tongues for ease of moving from one job to another.

The plant consists of two self-contained mobile sections: hopper and batcher (including scales) with new fold-up supporting columns.

The plant, which is said to be capable of two complete batches in 13 seconds, can be set up in just a few hours.

For further information write to the Heltzel Steel Form & Iron Co. Dept. C&E, Warren, Ohio, or use the Request Card at page 18. Circle No. 4.



The new Heltzel batching plant.

CONTRACTORS AND ENGINEES

### material spreader soil stabilization

the Highway Equipment Co. anthe Model TCS material for soil-stabilization work. inres include one-man operafell 8-foot spreading width, and ate metering of materials from n pounds per square yard.

a made lever activates the trans agitator, and conveyor. The haft control lever disengages

This engine generator provides 2,500 watts of 180-cycle 3phase 230-volt ac power, as well as up to 1,500 watts of 110-volt dc power for lights and universal motor-driven tools. Power is supplied by a Briggs & Stratton 4-cycle engine. Speed control is adjustable for best performance with low or high-slump concrete. A heavy-duty 2-wheel dolly with fully pneumatic tires is also available. For further information write to the Wincharger Corp., a subsidiary of the Zenith Radio Corp., Dept. C&E, Insurance Bldg., Sioux City 2, Iowa or use the Request Card at page 18. Circle No. 59.





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ENGINEER

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fat and accurate gate setting is a nojor feature of the Model TCS material spreader.

or drive wheel for cornering. The eded handle on the automatic tch gives fast, safe hookups.

For better balance, this unit has ur wheels; it throws no weight on truck hitch or the rear of the

For further information write to Highway Equipment Co., Dept. E-20, Dept. C&E, 616 "D" Ave. N.W., char Rapids, Iowa, or use the Reest Card at page 18. Circle No. 120.

### ortable screening unit ize-tests aggregates

A portable screening unit for sizeing blacktop and concrete aggres, ores, and similar materials is ered by the Gilson Screen Co.

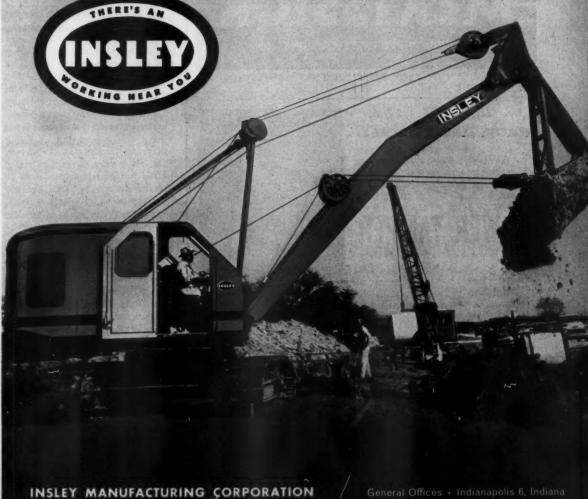
Called Porta-Screen, the unit may hand or motor-driven, and it hans samples up to 25 pounds in a range of 11/2 inches to 200 mesh. may be operated free-standing on surface, bolted to a semipermast location, or set up (with rectable spiked feet) on bare ground. For further information write to e Gilson Screen Co., Dept. C&E, 10 Center St., Malinta, Ohio, or use the Request Card at page 18. Circle No. 48.



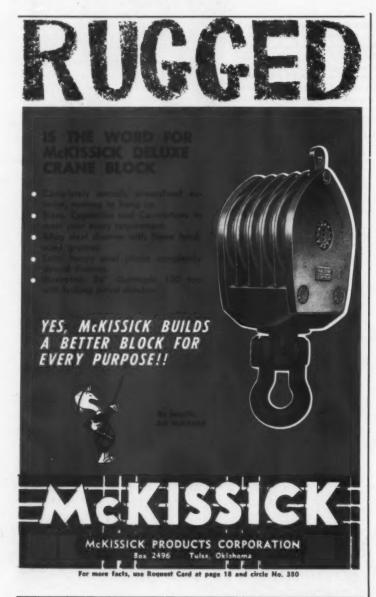
### Take a bigger bite with the Insley backhoe

• You can count on the Insley WB excavator to move more earth in any given time. That's because the WB takes a full bite—and more. It's a full 11/4 cu. yd: machine-on paper and on the job . . . and it's "power matched" to capacity for a profitable combination of performance, efficiency and long life. That's why it's a favorite in the industry.

See your Insley distributor and let him show you an Insley WB working in your area. See how the WB meets your requirements, as an excavator, self-propelled crane or truck crane. And get the facts on the complete line of Insley machines-5 to 45 ton crane capacity, 1/2 to 11/2 cu. yd. bucket capacity, crawler, self-propelled carrier and truck mountings.



For more facts on these products. circle the indicated number on the Request Card at page 18.



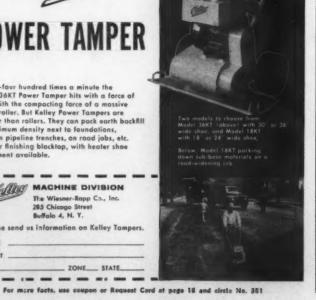
PACK, PACK, PACK ..

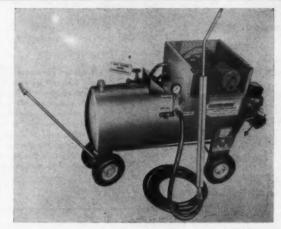
### POWER TAMPER

Twenty-four hundred times a minute the Kelley 36KT Power Tamper hits with a force of Kelley JOK! Tower Tamper hits with a torce of tons, with the compacting force of a massive power roller. But Kelley Power Tampers are handler than rollers. They can pack earth backfill to maximum density next to foundations, piers, in pipeline trenches, on road jobs, etc.

Also for finishing blacktop, with heater shoe attendment available.







### Steam-cleaner attachment gives hot-water rinse

A hot-water rinse attachment is now standard equipment on the Electro-Magic motor steam cleaner.

The attachment allows the operator to rinse or flush by turning a valve, and coils of the steam cleaner itself can be cleansed of solvents and other solutions.

The steam cleaner also features push-button controls as standard equipment. Electro-Magic models are reported to supply up to 100 pounds of steam pressure in 90 seconds.

For further information write to Electronics, Inc., Dept. C&E, P. O. Box 150, Vermillion, S. Dak., or use the card at page 18. Circle No. 101.

### Variable-impact drill cuts carbide breakage

A new variable-impact electric drill, 18 inches long and weighing 101/2 pounds, reported to be capable of sinking a 34-inch hole 3 inches deep in concrete in 180 seconds, is offered by Moorhead-Crego, Inc.

Carbide drills can be started with plain rotary action to forestall breakage, and impact force can be stepped up as the carbide cutting edges seat.

The drill is powered by a 4-amp heavy-duty motor that operates on 115-volt de or ac, 60 cycles or less.

For further information write to Moorhead-Crego, Inc., Dept. C&E, 615 S. Green Road, Cleveland 21, Ohio, or use the Request Card at page 18. Circle No. 50.

#### Masonry-saw device directs flow of water

The Hydra-Dial, a device designed to control the flow of water away from the operator, is now standard equipment on all Champion masonry saws.

Located on the front of the cutting head, the Hydra-Dial is set and adjusted by the turning of a knob. The device is said to be especially helpful when cutting with blades of smaller diameter than the capacity of the blade guard.

For further information write to the Champion Mfg. Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 130.



AIR HAMMER COUPLIN



The washerless coupling for all he air hose connections to hand drill drills, drifters, jumbos. Famous for str durability and efficiency. Quickly com and disconnected, with no lost or we washers to replace. Compact and

"BOSS" Air Hammer Couplir above except Washer Type.

For lighter services—"GJ-Dixon" et "Dixon" Air Hammer Couplings.

### "BOSS" Self-Honing AIR VALVES

Used for the efficient cor osed for the emician compressors, manifolds, headers, sump pumps, etc. Strong, durable, compact. Self-adjusting, quick-opening, full flow. Male or female L.P.T.



For more facts, circle No. 382 CONTRACTORS AND ENGINE

### udraulic pipe cutter offers special benefits

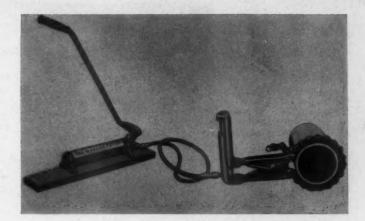
A new pipe cutter has been anmoved by the Wheeler Mfg. Corp. grown as the Wheeler Jr. hymale cutter, this unit is designed handle up to 8-inch standard and ma-heavy soil pipe, as well as 2 al 3-inch cast-iron water main.

It is said to be ideal for use in ine quarters and on overhead inminimum. The heavy-duty hydraumump may be easily and safely

operated remotely from the actual cutting location.

The complete hydraulic assembly may be readily substituted for the handles of the firm's manual cutter to convert to hydraulic power.

For further information write to the Wheeler Mfg. Corp., Dept. C&E, Ross Road, Ashtabula, Ohio, or use the Request Card at page 18. Circle No. 28.



# Snap-Tys for Home Building & Industrial Name Building & Industrial Name Building & Industrial

### or every kind of concrete construction







### there's a dependable Richmond product!



COUPLI

J-Dixon"

D ENGI





Richmond has learned, through years of practical experience and research, how to design and produce the most effective and economical form ties, anchors, inserts and accessories for every conceivable kind of concrete construction.

All Richmond-engineered products, and there are more than 400 in the complete line, are designed to provide the extra strength that assures a safe, dependable forming job while saving time and money.

In addition, Richmond's field representatives and Technical Department can help you with any problem you might encounter in planning your form work . . . and will provide you with estimates, "take-offs" and material specifications on request.

Richmond's line of laboratory-tested form ties, anchors, inserts and accessories is the largest—in the field. It provides you with one source for all your concrete forming needs...ask for, and insist on "Richmond".

For complete information about Richmond's full line of quality products for concrete constuction—or assistance with any specific concreting problem, write to:



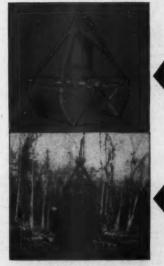
Main Office: S16-838 LIBERTY AVENUE, BROOKLYN S, N. Y. Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Misseuri, In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.

For more facts, use Request Card at page 18 and circle No. 383

# the Greatest Name in Buckets All Over the World

Wherever you go, wherever you see excavating or handling of materials...there you will find one or more OWEN Clamshell Buckets on the job. Faith in their performance, confidence in their sturdy construction, and complete assurance in their ability to complete contracts satisfactorily and "on time"... these are the reasons that powerful, rugged OWEN Clamshell Buckets dot construction jobs all over the globe.

You'll get more from an OWEN in every way — Longer Life, Larger Loads, More Economical Operation. From drawing board to finished product, OWEN lives up to its great name in every way. Put the real worker on the end of the boom! — get a Great OWEN Clamshell Bucket without delay.



### OWEN MATERIAL HANDLING BUCKETS

OWEN'S new center line reeving principle, now incorporated in a completely redesigned line of material handling buckets, is one factor that increases cable life of these buckets up to 75%. A full line now available from ¼ cu. yd. up to 10 cubic yards.

### OWEN GRAPPLES

OWEN'S patented independent tine action 4-prong grapple has proven itself invaluable in land clearing operations. Its independent tine action guarantees positive contact and tremendous gripping power on each of the four tines, no matter how irregular the shape of the object may bo.

Write us your exact requirements. Remember, OWEN Engineers are at your service. Send for Free Catalog today.



The OWEN BUCKET Co.

ANCHES: New York • Philadelphia • Chicago Berkeley, Calif. • Fort Lauderdale, Fla

For more facts, use Request Card at page 18 and circle No. 384

The Lull bucket is dumping at a 45-degree angle; it can also dump at a 90-degree angle and to right or left.



### New concrete bucket has swivel design

The Lull Engineering Co. announces a new swivel-type %-cubicyard concrete bucket.

This bucket has a swivel of 180 degrees and a 5-position lock. It is mounted on ball bearings and is easily swiveled by hand. Dumping is hydraulically controlled from the operator's seat.

The bucket is so designed that it will fit any of the Lull 7B Hi-Lifts. It permits the operator to travel per to the forms and to discharge load to either side. When working close quarters, the operator can posit his payload to the right or h

For further information with the Lull Engineering Co., Dept. C 3045 Highway 13, St. Paul 11, Min or use the Request Card that bound in at page 18 of this is Circle No. 90.



GraderloadeR", new shovel loader designed specially for all nodels of Caterpillar Motor Graders. Blade then load. 1 cu. yd. ucket does not interfere with regular grading operations.

### Grade and Load with One Machine -ARTIN GraderloadeR!

Make more money with your Cat Motor Grader by attaching a production boosting Martin "Grader-loadeR". One machine, one operator is all you'll need for grading and loading. Approved design and engineering suitable for loading excess windrows, stockpiling, backfilling, snow removal. Call your Martin-Caterpillar Dealer for a demonstration. Get the proof that a "GraderloadeR" will save thousands of equipment investment dollars.



### Another Martin profit builder . . .

3.5 cu. yd. "GraderscrapeR" attaches in place of blade on all Cat Motor Graders. Handles any small or medium cut. Operates from standard grader controls and tilts 30° to cut at angles.

Write Today for more details on Martin Attachments for Cat Motor Graders!

ARTIN COMPANY SES ANOREWS AVE. . NEWANEE, ILLINOIS

For more facts, circle No. 385

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

### 15-speed transmissions for heavy-duty vehicles

Two new 15-speed transmissions for heavy-duty truck service are announced by the Fuller Mfg. Co.

For use in diesel-powered trucks and tractors in the 1,120-cubic-inch class, the new transmissions. Models



The new transmissions are designed for diesel-powered trucks and trac-tors, for on and off-highway use.

15-G-1120 and 15-H-1120, are designed especially for combination on and off-highway applications such as aggregates and ready-mix concrete.

Benefits of the new transmissions include:

- 1. Extremely short installation dimension permitting shorter wheelbase for tractors that formerly incorporated main and auxiliary transmissions.
- 2. Maximum operational flexibility. with not only 10 closely spaced gear splits but also 5 speeds available for low-range operation through a deep reduction in the auxiliary.
- 3. A wide choice of optional gear
- 4. Weight reduction obtained by elimination of support brackets, joints, cross members, and a propeller shaft.

For further information write to the Fuller Mfg. Co., Transmission Division, Dept. C&E, Kalamazoo, Mich.. or use the Request Card that is bound in at page 18 of this issue. Circle No. 22.



Contractors such as Peter Kiewit Sons' Co., and many others are reducing costs with the one hydraulic, Hlab Speed Loader. The Hlab provides hized materials handling on a wide variety of utility. The HIAS 170 offers a range of lifting capacon the shortened boom of 5' to 2200 lbs. c 13'. The boom length is easily adjustable throug Control is from either side of the truck cab. Ideal for general mainteance work, the HIAS

Control is from either side of the truc ideal for general maintenance work, 20' above ground level at a maximum speed of 20" per second. Crane action is positive and accurate. 200° or 360° swing arc. When not in use the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load.

Also available is the HIAB "Bimbo" Model 290 — a smaller version of the HIAB 170, with similar design features.



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WRITE FOR NAME OF YOUR NEAREST DEALER







formation write to Registrar
EARTH MOVING DIVISION



### Mobile hydraulic hammer works from side to side

A new side-action mobile hydrauis hammer is available from the Arrow Mfg Co. With this Model 130-AS, the operator has a 7-foot working with when leads are vertical, 8-foot when angled.

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Designed to work close to piers, distincts, and footings, it can work from side to side across the front of the machine, and in forward or re-

The hammer can be shifted rapidly from side to side. Lift of the 1,000-pound hammer weight can be controlled from inches up to 9 feet.

Companion to the Allis-Chalmers G-149 and G-226, the G-138 develops 39 bhp at 1,800 rpm.

### Expand engine line with 39-bhp units

Allis-Chalmers has expanded its line of gasoline and natural-gas engines with the addition of the G-138, a new 4-cycle, 4-cylinder, 138-cubic-inch piston displacement unit that develops 39 bhp at 1,800 rpm.

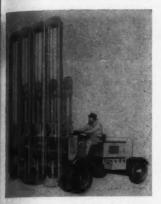
The G-138 power unit is 46 inches long, 18 15/16 inches wide, and 30½ inches high to the top of the radiator. The engine weighs 402 pounds, and the power unit 622 pounds.

The G-138 has a heavy-duty clutch

power takeoff, and a large-diameter flywheel for easy starting and smooth pickup of loads. Magneto ignition is standard. A 12-volt distributor ignition and a heavy-duty magneto for use with natural gas are optional.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 113.





The hammer is shifted hydraulically from side to side. Lift can be controlled from inches up to 9 feet.

aniomatic to deliver blows of uniform impact at a uniform rate, or "-hammer can be controlled manmally.

Other hydraulic controls tilt the tower forward or backward or at an angle or can fold it back, reducing the height of the machine from 13 feet il inches to 6 feet 10 inches for passage through doorways or for highway travel.

The machine can be driven from job to job at highway speeds up to 20 mph. Working speeds are variable up to 32 fpm, forward or reverse. The machine has front-wheel drive for maximum traction and rearwheel steering for mobility.

For further information write to the Arrow Mfg. Co., Dept. C&E, 194 W. Dakota Ave., Denver 9, Colo., or use the Request Card at page 18. Circle No. 34.

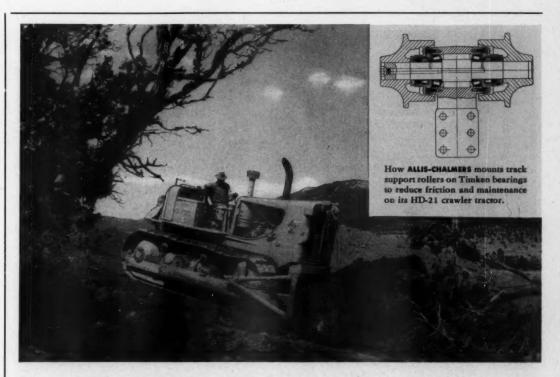
### Device explores earth to depths of 50 feet

The Model 117 seismic timer is anounced by DynaMetric, Inc.

The device features direct, totalized time reading for measuring hammer-induced shock-wave velocities in soils. It reportedly allows shallow exploration of earth structures to depths of 50 feet, without drilling.

The Model 117 measures 7×7×11 inches and weighs 12 pounds.

For further information write to DynaMetric, Inc., Dept. C&E, 2955 E. Colorado Blvd., Pasadena, Calif., or the Request Card that is bound at page 18 of this issue. Circle No. 100.



# How Allis-Chalmers cut power-robbing friction, boosted drawbar power on its HD-21

IT takes more than big power and weight to deliver the big "push" the easy way this Allis-Chalmers HD-21 does. It takes easy-rolling truck wheels, idlers and support rollers. And Timken® tapered roller bearings reduce friction to give that easy rolling. With friction cut, the 225 HP., 45,500 lb. tractor moves easier and more power goes to the drawbar.

And for extra load capacity, Timken double-row bearings are used in the transmission. All told, there are 59 Timken bearings used in the HD-21 to:

1) Practically eliminate friction.

They're geometrically designed and precision manufactured to roll true. They roll smoother—help parts work easier, longer.

2) Take all loads, cut maintenance. Their taper enables Timken bearings to take any combination of radial and thrust loads. And because Timken bearings hold shafts concentric with their housings, they make closures more effective in keeping lubricant in, dirt and grime out, maintenance down.

Timken bearings give you many extra advantages. You get service from graduate engineer salesmen, and all the experience of pioneering tapered roller bearing design. And bearing leadership is maintained by the most modern research and production facilities in the bearing industry.

When you buy Timken bearings you receive: 1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian Plant: St. Thomas, Ont. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.

TIMKEN®

tapered roller bearings

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# Job-built jacks handle prefabricated roof form

Form sections for the hyperbolic paraboloid roof of a new warehouse in Phoenix are being raised into place on 4×4 shores by special jacking units made by the contractor. These consist of a channel frame, on casters, with pipe columns. Jacking units at each end of both frames raise a 17.5×35-foot form section.

A sturdy, simple form system, profabricated at floor level on the sand raised into place by job-sun jacks, resulted in the speedy and economical construction of the set thin-shell hyperbolic paraboloid co-crete roof in Phoenix, Ariz. Press columns, tilt-up walls, and a cast-place floor slab complete the structure, the Lou Regester warehouse.

The general contractor, Gilbert a Dolan, Phoenix, tackled the thin-shall roof without previous experience in this type of structure but with a extermination to do the job efficiently and well. Its success is evidenced by the fact that the firm already has another similar structure under contract and that more are in the design stages.

The economy of Gilbert & Dolans operation depends on a straightforward, step-by-step program that keeps a small crew busy but uses a minimum of expensive equipment and has that on the job only when it is needed.

### Step-by-step operation

After the site was graded, excavations were made to neat lines for the 6-foot-square column footings so that no forms were required. A square form suspended in the middle of the footing blocked out a space for the precast columns. The columns are spaced at 35-foot centers in the structure, which measures 141×281 fest over all.

Forms and screeds were then set for the 5-inch reinforced-concrete floor in 4-panel units of 4,900 square feet each. Masonite strips were set ½ inch below floor grade on the lines between columns. Then the floor was cast and finished without joints at these lines. The inserts provided



Concrete placement is handled by a rented crane that was used intermitently for several jobs at the site. Work was scheduled so that the crant could be used for a number of purposes before it was returned.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

### The Vibrator that keeps costs calm

You don't have to get excited about costs when you use a Homelite High-Cycle Electric Concrete Vibrator. Only one man runs it, anywhere. Your labor costs less. And, there are more savings to gain. You need no special cradles or scaffolds. You set your Homelite Generator in any convenient spot within a 400' radius, and your man goes to work. Homelite's High-Cycle Vibrator handles 30 to 40 cubic

yards of 2" slump concrete per hour. Works in tight spots or deepest forms without damage to tough kink-proof handling hose. Rugged, high-cycle motor in vibrator head cuts maintenance. Carryable, 143 pound Homelite Generator saves in many ways. Runs one or two vibrators and also operates 110 V. AC-DC electric tools and floodlights. Write for full information, now.

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PUMPS-GENERATORS-BLOWERS-CHAIN SAWS

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In Canada — Terry Machinery Co., Ltd.

For more facts, use Request Card at page 18 and circle No. 389

The forms for the roof were constructed on the completed floor slab. Note that all structural members of the form system are straight pieces; the %-inch plywood is readily warped to fit the curved surface.



Justs lower the form panel, and it is beught to a new area. Eight of the eits are used to construct 5,000 agoure feet of roof area at a time. A small crew, using only the jacking eith, stripped and reset the forms in two days.

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At the same time, the 14-inchgeare concrete columns were being preast in a gang form on the job size. A rental crane picked the colums from the bed and set them in place in the holes in the footings. Grout was dry-packed around the columns in order to anchor them in

#### Form system prefabricated

As soon as a section of floor was ready, the crews began fabricating the roof form. Each 17.5×35-foot form section consisted of three timber trusses running the length of the punel, with 2×6 joists spanning between the trusses. The %-inch plywood decking was easily warped to fit the curved surfaces generated by the structural members of the form.

Eight of these panels were built. They were used simultaneously to form a 5,000-square-foot area, which was the casting unit. The forms were thoroughly oiled before each use and were re-used eight times in the structure. They are still in excellent condition and can be used on another structure of similar dimensions.

#### Job-built jacks raise forms

Two job-built jacking rigs raised the 17.5×35-foot assemblies from the floor to a height of 16 feet, where they were shored on 4×4 shores wedged up from the floor. Each of the jacking units consisted of a rectangular base frame made of structural steel members with a large (Continued on next page)

columns are precast at the site in this any form; the buckets of concrete esp the form from floating as contest is placed.

For more facts, circle No. 390-

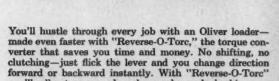




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power for your money.

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Construction of the cast-in-place floor Construction of the cast-in-place floor and erection of precast columns early in the job were a smooth operation. Footing holes are excavated neat, and a reinforcing mat is suspended from planks spanning the hole. The box form at center creates a pocket for the process column. for the precast column.



The column footing has been poured, and forms are in place for the slab. The area around the column has been blocked out; it will be poured after the column is set. The Masonite strips will be ½ inch below the slab surface; they confine cracking to straight lines at these locations.

caster at each corner. On each end was a vertical pipe post braced back to one of the corners and cross braced between the posts.

A pipe sleeve with a jacking foot welded to it slipped over each of the vertical pipe posts. Two hand winches were mounted on the corners of the base frames. Lines from the winches ran up over blocks at the tops of the posts and back down to the jacking sleeves.

These jacking rigs engaged the ends of the form assembly, and four workmen at the winches easily raised the assembly off the floor. The workmen could then wheel the entire sembly into position and jack it to the required height.

When forms were to be strip the jacks were replaced under a form assembly while the wedges shoring were knocked out. Then is form was lowered enough to clear; underside of the slab and rolled its next position. The crew stra moved, and reset the eight as making up a 5,000-foot roof and in two days.

Transit-mix concrete, supplied Arizona Sand & Rock Co., was ple by a rental crane and buckets. T slab is just 21/2 inches thick, with a edges thickened to 8 inches. After the concrete was placed and finish it was given an application of He Process special black curing con pound. Later, a conventional builtroof was applied.

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#### Tilt-up walls

The wall panels were precast rigi on the job in stacks. Most of the panels were 17.5×17 feet and 5 inch thick. As they were cast, each par was then given a coating of Sonn born's Sonotilt parting and curin compound.

The wall panels were cast with a 3/4-inch V-groove in each side. The were set in place with 1/4 inch d clearance between them, and this space, including the V-groove, was dry-packed with mortar. A rental truck crane picked the panels from the casting stack and set them in place on the pad footings around the

Equipment charges on this joint were extremely low, since the rental crane was practically the only pice of heavy equipment required. Col-

#### **GREENVILLE RIPPER FOR IH TD-15, 20, 25** TURN TRACTOR INTO 4-WAY MACHINE

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	rately, each piv spots in rock. Th greater traction	e ripper we	eight balan	ces dozer, resu	
	Mux. Ripping Dopth	Ground C	learance	Overall Width	Tool Box
Tructer	W/Std.	24" Shunk	18" Shunk	Tool Soum	Cross Se

THE GREENVILLE TRAILING SWING BRACKETS work sepa-

	Mux. Ripping Dopth	Ground C	learance	Overall Width	Tool Boam	Pump Data	Cyl. Dir	nensions	Pist. Rod
Tructer	W/Srd. Shunks	24" Shank	18" Shunk	Tool Bonm	Cross Sect.	(Rear PTO)	Bore	Strake	Diam.
TD-25	24"	31"	-	109"	11" x 12%"	60 gpm @ 1000 psi	8"	151/2"	3"
TD-20	24"	24"	1000	102"	10" x 12"	44 gpm @ 1000 psi	6"	15"	214"
TD-15	18"	-	12"	90"	8" x 8"	37 gpm @ 1000 psi	5"	15"	2"



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The rental truck crane is used to set columns in place. They are braced to hold them plumb until the grout around the base is

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gans, and floor and wall slabs were est directly from the transit mixers. The timing of the various phases was worked out so that the rental crane sould do a number of jobs while it at the site. Then as soon as these sere completed, the crane was discharged until it was needed again.

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#### Personnel

Boduroff & Meheen, consulting engineering firm of Phoenix, employed w Gilbert & Dolan, suggested the use d hyperbolic paraboloid shells for the ich, using movable forms and precast

Running the job for Gilbert & Delan was superintendent Henry T. McNeil, who worked closely with A. Carlton Gilbert, one of the partners in the firm. John R. Dolan is the other partner. The structure was built for Lou Regester and is intended for we as a furniture warehouse.

THE END

#### Stone & Webster names

George W. Letteney has been appointed assistant treasurer of Stone & Webster Engineering Corp., Boston and New York City. He joined the exporation in 1942 as an accounting supervisor.

Edmond B. Hymmen has been named chief engineer of Stone & Webster Canada, Ltd. Hymmen, who will be located in Toronto, will now he responsible for coordination of engineering activities undertaken in conjunction with other companies of the Stone & Webster group.

#### coln Electric adds two field men

Lincoln Electric Co., Cleveland. has named Charles Stratton to Kansas City and Robert E. Haas, Jr., to Chicago as field welding engineers. Both will serve their areas in engineering the application of arc-welding processes and equipment.

#### Waukesha branch moves

■ The Los Angeles branch headquarters of Waukesha Motor Co., Wautesha, Wis., have been moved to new offices at 5608 Soto St., Huntington Park, Calif. The company will no langer operate a branch at Watts.



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Model T-700, 220 hp



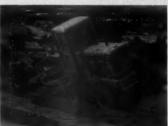
Model T-600, 160 hp "Grude-Q-Metic Drive Weight-30,020 lbs. Power Shift Mibd. 12'x29"x%" \*Tarque Converter and Power-Shift Transmission



Model T-500, 125 hp



Model 160, 160 hp Constant Mesh Transmission Weight—28,520 lbs. ower Shift Mibd. 12'x29"x¾'



Model 118, 125 hp



Model 104, 100 hp Constant Mesh Transmission Weight—23,900 lbs. Meldboard—12'x24½''x¾''



Model 450, 85 hp stant Mesh Transmission Weight—22,415 lbs. Idboard—12'x24'z''x'4''

(All weights are with scarifier)

Model 303, 70 hp Eight-Speed Transmissi Weight—15,750 lbs.



Four-Speed Transmission Weight—9,460 lbs. Meldboard—10'x16%"x%"

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## Product

To obtain free copies of any of the literatus described in the following section, circle the designated number on the Request Card at page 18.

Welders—a bulletin giving condensed specifications of all P&H transformer, rectifier, and rotary dc welders. Includes data on optional equipment and is well illustrated with charts and photographs. Bulletin W-158.

W-156.
Write to the Harnischfeger Corp.,
Dept. C&E, 4400 W. National Ave.,
Milwaukee, Wis., or use the Request
Card that is bound in at page 18 of
this issue. Circle No. 26.

These tracks tell why

Stake puller—a bulletin describing the Holland Model C stake puller. Lists and illustrates the features of the unit, including its ability to pull angled stakes, as well as rods up to 2½ inches in diameter from concrete walls. Also offers brief data on two of the firm's post pullers.

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of the firm's post pullers.

Write to the Holland Mfg. Co.,
Dept. C&E, 920 15th Ave., East Moline, Ill., or use the Request Card at
page 18. Circle No. 121.

Apron feeders — literature on Rogers apron feeders, covering Rok-Ore, Whale-Back, and Roadbuilder models. Illustrations include on-thejob photographs, plus close-ups of major components. Dimensional drawings, specifications supplement the text.

Write to the Rogers Iron Works Co., Dept. C&E, P. O. Box 869, Joplin, Mo., or use the Request Card at page 18. Circle No. 39. Rollers—a folder describing the construction and operating characteristics of Rolcor rollers. Models onered are Rollpac, Sta-pac, Vibraton, and Vibrapac. Illustrated with photographs. Bulletin 60-3.

tographs. Bulletin 60-3.
Write to the Rosco Mfg. Co., Robriosion, Dept. C&E, 3118 Snelling Ave. S., Minneapolis 6, Minn., or in the Request Card at page 18. Che No. 125.

Concrete retarder—a brochuse describing the benefits of Johns-Mas-ville Retardwel, a liquid retarder with water-reducing properties for potland-cement concrete. According to the literature, Retardwel delays the initial set of concrete and provides a slower rate of heat evolution, therefore minimizing thermal stresses. Photos and graphs.

minimizing thermal stresses. Phone and graphs.

Write to Johns-Manville Product Corp., Celite Division, Dept. Cag. 2

E. 40th St., New York 16, N. Y., at use the Request Card at page 11

Circle No. 71.

Motor grader—a new, revised calalog on the Allis-Chalmers Model D motor grader. Contains a cutaway view of the grader, illustrations of is gasoline or diesel-engine power plant, and photos of various components Also shown and discussed are the various attachments and accessories to match the grader to individual requirements. Specifications included Catalog No. MS-1319.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Mi-waukee, Wis., or use the Request Card at page 18. Circle No. 102.

Crane—a brochure on the Koehring 330 Sprawler, a crane with a 30-ton lifting capacity. Illustrate various features including pivoting outriggers, one-piece car body and crawler, self-cleaning crawler sp-



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singing nook rollers. Schematic dia-gram and photographs. Write to the Koehring Division, genering Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., we the Request Card at page 18.

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d acces ndividual rens included Bock-drill crawler—a folder de-ming and illustrating the benefits of Mor Model TR-5 air-and-hydrau-le rock-drill crawler. Emphasizes mertip hydraulic positioning of met and drifter. Complete specifica-

write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, II, or use the Request Card at page II Circle No. 74.

Nopper trailers—a booklet on Gar Wood Mono-Shell hopper trail-en for bulk hauling. Emphasizes such features as bigger legal payloads, faster operation, lower maintenance outs, and choice of air-powered or cale-operated gates. Text well illus-trated with photographs and draw-

Write to Gar Wood Industries, Inc., Dept. ChE, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 37.

Concrete plants-a brochure deexisting three Johnson transit-mix concrete plants: the 68-ton Roust-about, the 80-ton Econoplant, and the 178-ton Jumbo. Gives details on how the firm's concentric batchers give premixture of materials and minimum of dust during discharge.
Also describes the cement elevators
and cement aeration systems of the plants, as well as their 3-aggregate

Write to the C. S. Johnson Co., subsidiary of Koehring Co., Dept. CEE, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 106.

Masonry bonding agent—a cata-log covering Hornbond, a liquid res-mous emulsion bonding agent for concrete, plaster, cinder block, and other surfaces. Information on method of application, coverage, and tests for vibration, acidity, and toxicity,

Write to A. C. Horn Cos., Dept. ChE, 2133 85th St., North Bergen, N. J., or use the Request Card at page 18. Circle No. 41.

ROTARY SWEEPER BROOMS

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Earth tamper—a bulletin on the new Stow T-18 Synchro-Tamper. The unit, which synchronizes the en-gine stroke with the vibrator, is completely illustrated, and detailed speci-

fications are furnished.

Write to the Stow Mfg. Co., Dept.
C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 135.

Heavy-duty trucks—a brochure describing four series of Mack trucks: B-40, 5 to 10-yard capacity as reardumpers, 5½ to 7 as mixers; B-60, 6 to 12-yard capacity as rear-dumpers, 5½ to 8 as mixers; B-80, 7 to 14-yard capacity as rear-dumpers, 7½ to 10. capacity as rear-dumpers,  $7\frac{1}{2}$  to 10 as mixers; and the Mack L Series—15 to 40-ton end-dumpers, to 50-ton bottom-dumper.

Write to Mack Trucks, Inc., Dept. C&E, 1355 W. Front St., Plainfield, N. J., or use the Request Card at page 18. Circle No. 64.

Heavy-duty trencher—a catalog describing the Arps Trench Devil Model MA-2. According to the literature, the one-man-operated trencher has five digging widths—2¾, 3½, 4, 6, and 8 inches, up to 54 inches deep. Digging speed is variable from 0 to 1,200 feet per hour in either direction.

Pictures and complete specifications.
Write to the Arps Corp., Dept. C&E,
New Holstein, Wis., or use the Request Card at page 18. Circle No. 107.

Chemical cleaner—literature describing Zep X-6556 chemical cleaner, a specially compounded, inhibited acid cleaner in liquid form. According to the literature, the cleaner may be used to remove portland cement from construction machinery and does not harm paint or subserged. harm paint or rubber gaskets.

Write to the Zep Mfg. Corp., Dept. C&E, P. O. Box 2015, Atlanta 1, Ga., or use the Request Card at page 18. Circle No. 118.

Pickup sweeper—a folder describ-ing the Mars Model 594 pickup sweeper. Easily attached to all popu-lar-make front-end loaders, the unit sweeps, picks up, and loads. Also con-tains data on the firm's angle broom and bucket clam. Photographs and specifications. specifications

Write to the Mars Equipment Co., Inc., Dept. C&E, 5209 W. Broadway, Minneapolis 22, Minn., or use the Request Card at page 18. Circle No. 7.

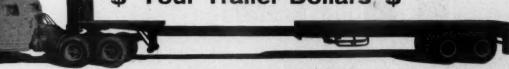
Scaffold—a folder on the Advance Model 10-M heavy-duty scaffold designed to support extra-heavy concrete slabs and beams. Diagrams show scaffold assembly by means of self-contained panel and brace locking mechanisms that eliminate the use of tools and the expense of lost parts. Accessory items also illustrated and described in detail. Bulletin No. 73.

Write to the Beaver-Advance Corp.



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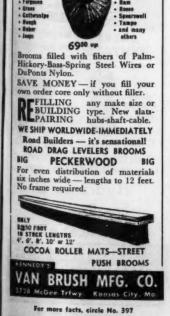


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The newest and most unique trailer in the high-flat field today! This versatile "2 in 1" rig s-t-r-e-t-c-h-e-s your trailer dollar as it s-t-r-e-t-c-h-e-s its deck, from 35' closed to 55' extended. No Binding or Sagging even when completely open. No center jack necessary for closure. No DOG-TRACKING, No SWAYING or WHIPPING.

Why buy a conventional high-flat when for slightly more this new unit will give you a standard length when closed and extra length extended—for those "special" hauls! Reduce permit problems. No need for Costly "special" equipment that's often idle. It will Pay you to own an, "on the move," Rogers X-tendible.

New lightweight, axle suspension for freedom of axle movement in turns and smoother riding with less maintenance. Basic force brakes, free of hop and chatter with wide 7" shoes.





Dept. C&E, P. O. Box 792, Ellwood City, Pa., or use the Request Card at page 18. Circle No. 17.

Vibratory feeders — a 32-page catalog on Syntron vibratory feeders. Complete descriptions and specifications; more than 90 illustrations.

Write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 97.

Portable stabilization plant— a folder on the Boardman Traveler portable central-mix soil-stabiliza-tion plant. Describes the machine as a feeder, feeder trap, conveyor, and pugmill in one lightweight unit. Il-lustrated with photographs and di-mensional drawings.

Write to The Boardman Co., Dept. C&E, P. O. Box 1152, Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 136.

Grader, finisher - literature on the benefits of the Gurries automatic road builder for use in a wide variety of spreading and finishing work. Complete specifications include a true planing length (actual effective wheelbase) of 44 feet 8 inches; 52ot over-all length; and 13-foot ade width. Action photographs. Write to the Raymond Gurries Mfg.

Co., Dept. C&E, 1720 S. First Ave., San Jose 12, Calif., or use the Request Card at page 18. Circle No. 126.

Speed shift for scrapers—a bulletin on the Brookfield speed-shift control for Caterpillar scrapers. According to the literature, the device eliminates double clutching, has no adjustments, and is easily installed in

adjustments, and is easily installed in 30 minutes by any mechanic.

Write to Brookfield Laboratories, Dept. C&E, 21 Walnut St., North Brookfield, Mass., or use the Request Card at page 18. Circle No. 145.

Off-highway hauler—a catalog detailing the features of the 19-ton International Model 65 Payhauler. According to the literature, the unit's newly designed body has made possible a 5,000-pound reduction in body weight. Catalog CR-744-I.

Write to the International Harves-ter Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 138.

Admixtures for concrete alog describing Dewey and Almy's admixtures for concrete, listing in detail their uses, advantages, and specifications. Included are Darex AEA, which adds air; WRDA, which reduces water; and Daratard, which retards set. Bulletin 437-3.

Write to the Dewey and Almy Chemical Division, W. R. Grace & Co., Dept. C&E, 62 Whittemore Ave., Cambridge, Mass., or use the Request Card at page 18. Circle No. 139.

Auxiliary hoist control in ture illustrating and describing Hydra-Set auxiliary crane and l control instrument—a closed-con control instrument—a closed-can hydraulically operated device can be installed between any on hook and the load. It requires no ternal power to operate and rep-edly will raise or lower loads a 100 tons a distance of 12 inches, accuracy to within 1/1,000 inch. letin H-21.

Write to the Mefco Sales & Series
Corp., Dept. C&E, 131 N. Fifth Ar.
Arcadia, Calif., or use the Request
Card at page 18. Circle No. 140.

Elevators, conveyors—an illustrated fact sheet on Baughman eightors for high-capacity handling of a gregates and free-flowing material Covers Models 175, 210, and 220, with the control of the control o Covers Models 175, 210, and 220, who buckets available in widths from to 26 inches. Also includes brief a scriptions of several models of everyors and unloaders. Form he

Write to the Baughman Mfg. C., Inc., Dept. C&E, 175 Arch St., Jr., seyville, Ill., or use the Request Carl at page 18. Circle No. 134.

Transmissions—a brochure scribing Cotta heavy-duty transmissions—with input torque capacities of sions with input torque capacities 150 to 2,500 foot-pounds. Stand 150 to 2,500 foot-pounds. Standard single-speed, multiple-speed, aright-angle drives are illustrated, and complete lists of input torque apacities, speeds, and gear ratios are

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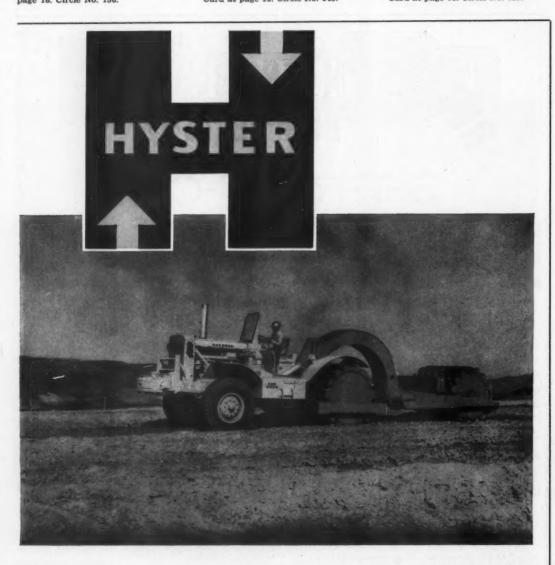
Write to the Cotta Transmissia
Co., Dept. C&E, Rockford, Ill., or us
the card at page 18. Circle No. 142.

Rock drill—a brochure on the Jap Model 450-DR dual-rotation percusion rock drill. Describes how the 450-DR, a 4½-inch-bore drill, use an integral air motor to provide hammerless rotation for steel changing and to assist rifle-bar rotation in tight formations. Bulletin No. 87-J. Write to the Joy Mfg. Co., Dept C&E, 333 Henry W. Oliver Bidg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 141.

Rollers-a fact sheet on Ken-Rol compaction power rollers available in 1½ and 2-ton models. Lists major features and includes brief specifica-

tions for both machines.

Write to Pfahler Mfg. Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 144.



New compaction economy -

### HYSTER has it!

Hyster DW20A Compacters speed up the whole job. You get compaction at over 1,000 cubic yards per hour-at a cost of less than 3c per cubic yard-and maximum production from your scraper fleet.

Ask your Caterpillar-Hyster dealer for a demonstration on your job.

Cat and Caterpillar are registered trademarks of Caterpillar Tractor Co.

TRACTOR EQUIPMENT DIVISION — Construction and logging equip INDUSTRIAL TRUCK DIVISION — Lift tracks, mobile croses, straddle MARTIN TRAILER DIVISION — Heavy mochinery houling trailers INTERNATIONAL DIVISION — Oversees manufacturing, sales and st

pries: Pertland, Oragon (Mome Office) o Danville, III. o Paoria, III. o Kawanse, III. o agen, The Netherlands o Glasgow. Scatland o Sao Paulo, Brazil o Sydney, Australia (Licen



#### HYSTER COMPANY

TRACTOR EQUIPMENT DIVISION P. O. Box 328

Peerla, Illinois

For more facts, use Request Card at page 18 and circle No. 399



Hydraulic Units For Special **Applications** 

DUDGEON INC

789 BERGEN STREET BROOKLYN, M. T. - ST 9-

CONTRACTORS AND ENGIN

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Units

### Proposals and contracts

by GEORGE E. DEATHERAGE, P. E.

construction consultant

This is the fifty-fourth of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

contractor plead misunderstanding or deception because of such estimate of quantities or of the character, location, or other conditions of the work.

The bidder is required to examine carefully the work site and the contract forms for the contemplated work. Information on boring shown on the plans is not guaranteed to be more than a general indication of the materials likely to be found adjacent to holes bored at the work site. The contractor should examine boring samples and base his bid on the conditions likely to be encountered. It is mutually agreed that submission of a

The mammoth federal highway prois under way, and superintendents and project managers will have meet not only the challenge of building roads but also the challenge d making a profit for companies that have to keep bid prices competitive. gen what may seem like a minor iciall of the work may mean a cost sting that can make or break a job. For the superintendent or project marager, a job doesn't start in the feld: it starts with mounds of paperwerk long before actual construction legins. Proposals, bidding documents. pecifications, and contract agreemmis vary in each state, and the contractor must become familiar with them in the area in which he intends is operate. It is impossible to present, in this space, the contract details for such state; procedures used in Florida will serve as examples.

As is the case in many other states. the general conditions of the conmet instructions to bidders, etc., are contained within the printed pages d the standard specifications for read and bridge construction. Amendments are noted in the proposal or bidding blank supplied by the Florida State Road Department.

After the date is fixed for the leting of the work, the department gives notice to contractors. The notice contains a description of the proposed work, information on access to proposal forms, plans and specifications, the amount and nature of proposed maranty, and the reservation of the department to reject any or all bids. This may be published as an adverment giving notice of request for

Contractors expecting to bid shall file, prior to receipt of bids, an experience questionnaire and a confidential financial statement. Upon rewest, the bidder shall be furnished, by the engineer, a proposal form that states the location and description of the work; the approximate estimate of the various quantities and kinds of work to be performed; the target date; materials to be furnished; the amount of proposal guaranty; and the date, time, and place of the opening of proposals.

#### **Estimated** quantities

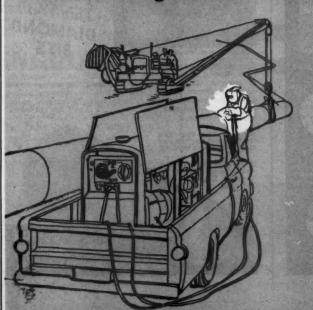
The estimate of quantities of all fork and materials is approximate. The department does not assume any onsibility that the final quantities will remain in strict accordance with stimated quantities, nor shall the

> For more facts, circle No. 401→ CONTRACTORS AND ENGINEERS



### **WELD 50 STORIES UP...** OR 50 MILES FROM NOWHERE

with P&H Engine-Driven Welders





HARNISCHFEGER

PMENT MAN



Excavation for 10,000 feet of 36-inch water main in Portland, Ore., is done by this Model 2000 Manitowoc trench hoe. This \$250,000 project for the Portland Water Bureau is part of the city's main-line feeder system. An average of 350 to 400 feet of main was installed daily.



Six weeks from the start of steel erection, the addition to the pilot pl Mead Corp., Chillicothe, Ohio, was under roof and closed in. Some 160 square feet of Flexicore decking was used for the roof and 5,000 feet for the mezzanine floor.

### W COST...EASY OPERATION



#### Rivinius LIVE POWER STEERING

CAT DS Tractors

(prior to 14A models)

SAVES MAN-POWER: Operator fatigue ga performance goes up I Finger tip control Steering provides closer, faster control of and maneuverability.

Steering provides account of the control of the con matically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

SAVES BOLLARS: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, volve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:

EUREKA, ILLINOIS
pillor Motor Graders: Torque Steering Booste
lic Moldboard Shift...Snow Blower...Snow Loade
arpillor D8 Tractors: Live Power Steering

For more facts, use Request Card at page 18 and circle No. 402

## THROW AWAY CRACKED DIESEL CYLINDER HEADS You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process...successfully used for more than a Quarter Century. GUARANTEED TO YOUR SATISFACTION

For more facts, circle No. 403



You Can Save On Drilling Time and Costs With

HOFFMAN Thin-Wall DIAMOND

Hoffman Thin-Wall Bits are engineered for the specific job . . . . assure you of faster, smoother coring on any test . . . regardless of material. Produce amazing time and cost-saving results drilling reinforced concrete, tile, asphalt, etc., because drilling speeds are predetermined. Hoffman tests the material to be drilled before designing your bits . . . there's no guesswork



For more facts, circle No. 404

#### management

(Continued from preceding page)

proposal shall be considered pri facie evidence that the bidder h made such an examination

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In the proposals, all blank spi under the heading Bid Price shall filled in with ink in both words figures, with the unit price for in item for which proposal is made ! a change is made in a unit or lum sum bid price after it has been wi ten in ink, the bidder shall write h initials beside the change.

Proposals shall be considered in regular and shall be rejected if the show omissions, alterations of for additions not called for, cond or unauthorized alternate bids, or ir regularities of any kind, or if the m prices are obviously unbalanced eith in excess of or below the reason cost-analysis values.

All bids shall be submitted in seals envelopes bearing on the outside th name of the bidder, his address, an the number of the project for which the bid is submitted. Proposals a ceived after the time for opening his will be returned to the bidder w opened.

No proposal can be withdrawn at it is filed unless the bidder makes his request in writing to the department prior to the time set for the open of the bids, or unless the department fails to accept it within 30 days after the date fixed for opening bids.

Proposals will be opened and re publicly at the time and place ind cated in the notice to contractor Only one proposal from an individu firm, partnership, or corporati under the same or different name will be considered for the same work Only reliable bidders capable of per forming the class of work conten plated will be considered in awardin the contract. The right is reserved to reject a proposal from a bidder wi has not paid or satisfactorily settle all bills due for labor and mater on former contracts with the Florid State Road Department or on con tracts with the same force at the th of receiving bids.

Before any contract is awards the bidder may be required to furnis



At the Texas A & M Heavy Equipment Operators School, facilities are available to menufacturers for testing new and experimental equipment. Test loading cycles with a TD-20 push-loading a DW15 scraper measure the performance of the scraper with a Shunk 'Gator Twistooth blade and a standard-edge blade.



Resurfacing of a county road near Blue Ridge, Ga., calls for plenty of work by a Huber-Warco 8 to 12-ton tandem. Three shots of asphalt at .35, .25, and .20 gallon per square yard were covered, respectively, with No. 5, No. 7, and No. 7 stone. Each lift was rolled by the rig.

a complete statement of the origin, composition, and manufacture of any and all materials to be used in the contruction of the work, together with samples that may be subjected to the tests provided for in the specifications to determine their quality

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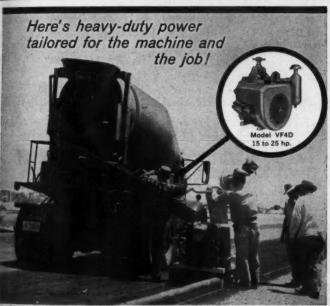
#### Centract award, execution

and fitness for the work.

After the proposals are opened and read, the correct summation of the moducts in the approximate quanti-

ties shown in the proposal by the unit bid prices will be considered the bid. The amounts will be compared and the results will be available to the public. In the event of a discrepancy between a unit bid price and extension, the unit bid price shall govern. Until the final contract award, the right will be reserved to reject any or all proposals and to waive technical errors as may be deemed best for the interests of the state.

(Continued on page 153)



TAILORED POWER for the Smith Mixer — made by the T. L. Smith Co., Milwaukee, Wis. — is a V-type, 4-cyl. VF4D Wisconsin Engine. The "Curbilder" — made by The Miller Spreader Corp., Youngstown, Ohio — is powered by a one-cyl. 9.2-hp. Wisconsin.

#### **WISCONSIN ENGINES**

Go Wisconsin, if you want to shave time and cost on your construction jobs. The reason: Every Wisconsin Engine is custom-engineered to fit the machine and the job.

You get field-proved dependability that keeps your men and machines busy around the clock in any season. Every Wisconsin is precision-fitted for smooth-firing power with minimum wear. And extra load-lugging power prevents stalling when the going gets rough.

Air-cooling eliminates dry-ups, freeze-ups, water and anti-freeze. And you don't have to buy, service, and replace radiators, water pumps, fan belts, hoses, and other water-cooling components.

If you want dependable all-weather power and lowest upkeep cost, specify Wisconsin. Sizes from 3 to 56 hp, with electric starting and choice of fuel system. Send for Bulletin S-249. Write to Dept. C-20,

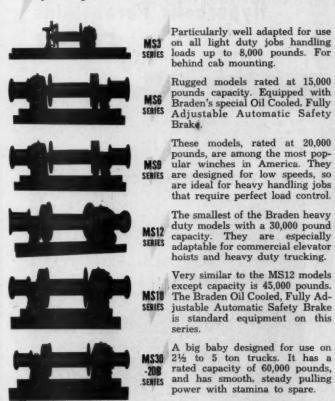


#### WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 405

### Check these **BRADEN** models for your truck winch needs



power with stamina to spare.

Here is the greatest capacity truck winch ever built on a production line. It has been tested to handle loads up to 100,000 pounds, and is designed to work perfectly on trucks of 5 tons or more.

Above are a few of the many BRADEN Truck Winches available from stock. In addition you may select underslung front end models, friction clutch winches, extended double drum units, as well as many varieties of custom designed models for special handling jobs. Write for complete information.



WINCH DIVISION OF MOTOR PRODUCTS CORPORATION

P. O. BOX 547 . BROKEN ARROW, OKLAHOMA

"In Service Around the World"



Some 27 tons of rack is being loaded into a Euclid rear-dump by a Bucyrus-Erie shovel during work at Hills Creek Dam In western Oregon. The dam is part of the Willamette Valley project of the U. S. Army Corps of Engineers. A joint venture has the 11-million-yard earthmoving contract.



An 85-foot prestressed-concrete beam, weighing more than 25 tors, picked off an International tractor and pole trailer by a team of cranss the site of an overpass on the Jacksonville Expressway, near Jacksonville Beams, girders, and piling were delivered by a hauling subcontractor.

## ELLIS Methods MAKE THE FORMING OF Hyperbolic Paraboloids EASY!



The new Community Blood Bank in Oklahoma City, being built by the Frederickson Construction Co., Inc., will have this attractive thin shell concrete roof, entirely supported by three columns.

#### HERE'S HOW ELLIS METHODS DO IT:



The shoring assembly consists of Ellis Shores with Adjustable Clamps, Ellis Purlins with Slipin Shore Holders, and 2 x 4 straight-line joists, upon which 36" plywood decking is laid in compound curves. Ellis Slip-in Shores are quickly erected and adjusted to the variable heights involved. Complicated measuring, cutting, blocking and wedging are eliminated! After pouring and curing, the 3" shell is weather-proofed with a plastic membrane coating. Walls will be of masonry and glass.



211 N.W. 4TH ST.

OKLAHOMA CITY, OKLAHOMA

For more facts, use Request Card at page 18 and circle No. 407

### Glen Canyon Bridge Project



### utilizes newest methods in

Photos by U.S. Bureau of Reclamation



## USF leave-in-place BRIDGE FORMS

A quarter mile in length — 700 feet above the Colorado River — truly a project that challenged every operation. U.S.F. steel forms again proved to be the safe, timesaving, money-saving way of forming the bridge deck. We'll be glad to send you details.



Highway Guard Rail • Bridge Florins Steel Farms for Concrete Bridge Ges-Corrugated Metál Pipe • Window, Well Metal Daors & Frames • Metal Building



Comes, damshell, and hoe operations required during construction of the Ebensburg state school for retarded children in Ebensburg, Pa., are handled by a Lorain 18-ton come. The rig, using a 60-foot boom, is placing concrete for one of the eight structures in the school complex.



Trench excavation for installation of a 2½-inch cast-iron water lateral in Portland, Maine, is handled by a Model HU Payloader tractor shovel equipped with a Wain-Roy backhoe. The water district uses the rig for general maintenance of service and for operations involving less than 100 linear feet of excavation.

#### management

(Continued from page 151)

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The contract will be awarded to the t responsible bidder whose proal shall comply with all the reents necessary to render it forat The award will be made within M days after the opening of the proin unless this time is extended by nal consent of the low bidder and department. In no case will an ward be made until all necessary inations are completed as to the sibility of the bidder to whom is proposed to award the contract. All proposal guaranties, except me of the two lowest bidders, will returned. These two guaranties will also be returned immediately after a satisfactory bond has been furnished and the contract has been executed by the bidder and delivered to the department. In no case will the paranty of the next-to-lowest bidder (Continued on next page)



machine for contractors. It self loads 55 to 60 tons . . drastically cuts dirtmoving cost.

For more facts, circle No. 409



You'll be amazed at the *extra miles* of compacting you'll get hour after hour, day after day, with Series M 50-55 Power Packers! The reason is simple: This self-powered "sheepsfoot roller" works at a pace appreciably faster than its towed counterparts; and *you never turn around on the fill.* 

More power is available for compacting because the Power Packer has to move no "idle" weight of a tow tractor. Each of its four roller drums is driven from the inside by its own

ELECTRIC DIGGER (Series L-50) is another Electric Wheel

electric generating plant automatically synchronizes the rollers at any of the infinite number of speeds you can select within the range.

Then, to travel in the other direction, merely

electric motor and gear reduction. A diesel-

Then, to travel in the other direction, merely swing the rotating seat and controls 180-degrees, spin a rheostat, and you're rolling! These quick-as-a-flash starts, stops, and reverses make working tight corners, or over slopes, quick and simple.

It all adds up to more production per man hour — the surest way to stay competitive . . . and profitable. Learn how present owners are making Power Packers pay. Just let us know you're interested, and we'll send all the specifics. The address is:

#### R.G. ETOURNEAU INC

2755 S. MacArthur, Longview, Texas

E106



Instead of using shovels to remove boulders along a 4.4-mile road on Cheyenne Mountain south of Colorado Springs, Colo., Hopkins Construction Co., Denver, has a D8 doze them out of the way. The access road leads to an underground operations center for the North American Air Defense Command.



Wire-reinforcement and concrete crews work simultaneously on the deck of a control building for the Atlas Operation-Testing complex at Vandenberg AFB in California. Symons Clamp supplied all but about 4 per cent of the 80,000 square feet of forming for structures in the complex.



### FORD PRESENTS THE 172 THE DIESEL FOUR !

(and it's interchangeable with the 172-cu. in. gasoline engine)

To meet the growing demand for diesel power, Ford now offers a choice of three economical diesels—the highly efficient 172-, 220- and 330-cubic inch models.

Whichever you select, you'll be getting a completely modern diesel that delivers the high torque necessary to handle tough jobs with outstanding operating economy and easy, low-cost maintenance.

Ford Diesels also offer dependable 12-volt electrical systems for quick starting . . . replaceable cylinder sleeves that eliminate costly reboring . . . and rotating exhaust valves for better seating, longer valve life.

What's more, Ford's 172 Diesel and 172 Gasoline engines are interchangeable in your equipment. Many parts, too, are interchangeable between these engines. And low-cost Ford parts and service are always available at any nearby Ford Power or Tractor Dealer.

For greater productivity and more profit in the long run, it will pay you to check the 172 model or other Ford Diesels at your Ford Industrial Products Headquarters.



ENGIN	IE SERIES	172 FOUR DIESEL	220 FOUR DIESEL	330 SIX DIESEL
Basic Model		DD	X	Y
Тура		4-Cyl. O.H. Valve	4-Cyl. Diesel	6-Cyl. Diesel
Bore and Streb	a—Inohes	3.9 x 3.6	3.94 x 4.52	3.94 x 4.52
Displacement-	-Cubic Inches	172	220	330
Brake	Dynamometer	59 @ 2400	60 ⊜ 2250	96 @ 2250
Horsepower	80% Dyn. BHP	47 @ 2400	48 @ 2250	77 @ 2250
Torque	Dynamameter	140# @ 1200	151# @ 1600	236# @ 1600
	88% Dyn. BHP	112# @ 1200	121# @ 1600	189# @ 1600
Compression R	atio	16.5 to 1	16 to 1	16 to 1

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to: FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

For more facts, use Request Card at page 18 and circle No. 411

#### management

(Continued from preceding page)

be held, without his written consent more than 30 days after the opening of the proposals.

The successful bidder shall furnial and file with the state an acceptable surety bond equal to the amount of the contract awarded. The bond shall meet all the requirements of the state. All bonds shall be executed or countersigned on the part of a surety company by a qualified resident agent. In case of default on the part of the contractor, actions for all expenses incident to ascertaining and collecting losses under the bond shall lie against the bond.

Within 10 days after the contract has been awarded, the successful bidder shall sign all necessary agreements. No proposal will be considered binding upon the highway department until the execution of the contract.

#### New Multi-Position, Power-Saving FLUID CONTROL

Special 3800-SP, 102 G.P.M. with 2 Plungers and 4-Positio Detent feature Standard Mounting Flange Mounting



#### HUSCO HYDRAULIC Multi-Plunger Valves

HUSCO Valves give you up to FOUR. Control Positions — Raise, Lower, Float and Neutral, with or without Detent — for unusual advantages in versatility and performance. Available to control up to SIX cylinders, single or double scting with Power-Saving Relief Valve. Capacities from 3 to 185 G.P.M. Over 120 standard models, with unlimited modifications to fit your specific need.

Get the whole story of HUSCO Features and a vantages. Write for your copy of HUSCO'S "How of Ideas" — and engineering aid on your contin

HYDRAULIC UNIT SPECIALTIES CO.

PUMPS • VALVES • CYLINDES
P. O. Box 257-8, Woukesha, Wisconia
West Coost Representatives
EASTMAN PACIFIC CO., Les Angeles, Call.

For more facts, circle No. 412
CONTRACTORS AND ENGINEERS



Her stabilization along a 3½-mile stretch of roadway near West Seneca, N. Y., is ded by a Blaw-Knox road widener working with a 20-ton truck. The 3A and No. 1 is was placed to a total compacted depth of 4 inches and a width of 5 feet. Three es of hot-mix paved the roadway.



Precast-concrete slabs are positioned in the Bachelor Officers' Quarters in Futema Okinawa, with the Vac-U-Lift method by the U. S. Navy. The 16-pad unit makes the job simple, fast, and economical. The beam measures 15½ feet with cross arms and pads fixed. Total capacity of the unit is 9,600 pounds.

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CONTROL



LVES up to FOUR
Lower, Float
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Valve. CaM.. Over 120
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features and al-HUSCO'S "House on your control

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Pailure to execute a contract and the an acceptable bond as provided berein within 10 days from the date d sward shall be just cause for the assulment of the award and the forstore of the proposal guaranty to the department, not as a penalty but n liquidation of damages sustained. The award may then be made to the ment lowest responsible bidder, or the werk may be readvertised or may be constructed by day labor, as the department may decide.

#### Scope of the work

The intent of plans and specifications is to prescribe a complete work of improvement which the contractor undertakes to do in full compliance with the contract. Proposed construction or requirements not covered by these specifications will be covered by special provisions and performed or died with by the contractor.

The engineer shall have the right to make alterations in the plans or character of the work as may be con-

(Continued on next page)

#### w All-Purpose Winch and Hoist Works Off Any 6- or 12-Volt Battery



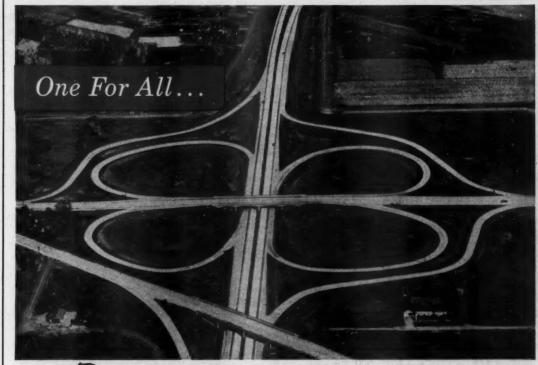
The new MY-TE all-purpose winch and hoist opmins from any 6- or 12-volt bartery. Lifts 2300
mushis Pulls 3000 pounds! Mounts an truck, car,
bet - anywhere - with just six bolts. It's portallo - an be quickly shifted from one job to
methe by one man. Only 27" l. x 12" w. x 14"
k Weighs just 60 lbs. Large drum with 5½"
functor flonges has capacity of 150 feet (14"
ability 75 feet (3½" colole). Stress proof shafts
and sours with powerful 175 to 1 ratio, Timken
insulings, sealed gear housings, clutch for fast
whole grant pressure brake for
able realing. Ten-foot remote cable has forward
and reverse control. Free load drum speed —
31 rpm. Backed by 90-day warranty. Cests far
ins then winch with power take-off. . . less
fea any winch of equal size or capacity — just
227.50. (Alsee 110-volt model \$280.00.) Both
ist, ladianapolis.

FREE Bullatin . . . Dooler Inquiries Invited

CITY ENGINEERING CO., INC.

Far more facts, circle No. 413

MAY, 1960



### resstite the one name to remember for all your construction sealing needs

### #357.1 RUBBER-ASPHALT JOINT SEALER

FOR EXAMPLE:

#88 HWY (HIGHWAY TYPE)
Modified #55 MIL for sealing joints in PCC highways, non-critical areas of airfields, bridge decks, parking jots, etc.

#67 COLD-APPLIED JOINT & CRACK FILLER

#99 JFR SEALER

Single component, no heating or mixing. Rubber-based for high flexibility, superior weather resistance.

Two-component, jet-biast resistant, cold-applied for sealing sawed and formed joints. Meets Federal Spec. SS-S-170.

#55 MIL (MILITARY TYPE) Cold applied, fast curing polysulfide polymer com-sound for sealing joints in PCC exposed to jet aircraft operations. Resists jet blast, heat, fuel and oil. Hot-pour type for concrete joints. Seals out water, foreign matter. Remains flexible over a wide field of service exposures. Meets Federal Spec. SS-S-164.

\$357.9 JFR RUBBER-ASPHALT JOINT SEALER

Specially designed to resist jet aircraft fuel. Meets Federal Spec. SS-S-167.

#### CD 579.1 JOINT CURING TAPE

crete joint curing tape. Retains moisture in the crete essential for curing joints. Protects freshly yed or formed concrete joints against infiltration of eign matter, cuts joint cleaning costs to a minimum.

#### CURING COMPOUNDS

complete line of membrane-curing compounds in-uding resin-base, wax-base, white-pigmented types-orm watertight film over concrete surface to assure rength and durability.

#### KAPCO AIR ENTRAINING AGENT

Produces in concrete mix a controlled dispersion of air in form of miscroscopic air bubbles. Also has ex-cellent wetting and dispersement properties. Con-forms with A.S.T.M. Designation C260-34.

#### KAPCO TONGUE AND GROOVE JOINT

Preformed mastic keyed joint. Economical, rigid, vaterproof, non-rusting. For highways, streets, air-port runways, industrial floors.

#### KAPCO PREMOLDED ASPHALT EXPANSION JOINT

Asphalt fibre and mineral filler premoided into sheets with asphalt impregnated liners on both sides. A water-proof joint filler.

#### KAPCO FIBRE EXPANSION JOINT

Non-extruding type of joint filler, fabricated from top-grade fibres, impregnated with waterproof asphalt.

#### KAPCORKS

Cork granule base in watertight bituminous binder, reinforced with heavy-duty impregnated felt liners. Recovers up to 80% of original thickness after series of three 50% compressions.

#### #340 KALKTITE® SEWER JOINT COMPOUND

Cold-applied, internal-sett watertight joint. Econom acids...Ready-mixed a

OVER 400 SEALANTS to Match Your Sealing Needs

WRITE Dept. C-10 for literature on any of above. Or use our FREE TECHNICAL SERVICE, de of application. No obligation



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#### management

(Continued from preceding page)

sidered necessary or desirable during the progress of the work to complete satisfactorily the proposed construction, provided no alterations are made that result in a substantial change in the general plan or character of the work so as to evade the competitive-bidding statute. The right is reserved to increase or decrease any or all of the items in the estimate of approximate quantities as shown in the proposal. The length of the project may be increased or decreased by adding or omitting sections or by

tion of changes in the plans results

### Whenever any change or combina-

### **SWENSON** the Summer-Spreader...



Winter

#### for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter icecontrol problems faster, afer, more efficiently. Write for complete



For more facts, circle No. 415

in increasing or decreasing the original contract amount by less than 25 per cent, and should each added or eliminated work be of the same general character as shown on the original plans, the contractor shall accept payment in full at the contract unit prices for the actual quantities of the work done

#### Agreement on changes

When the estimated value of the work indicates an increase or decrease of more than 25 per cent of the original contract amount, or if an alteration in the character of the work should materially increase the

cost of performance, a written supplemental agreement covering such changes shall be executed between the contracting parties before the affected work is performed.

The contractor shall perform unforeseen work, for which there is no price included in the contract, whenever it is deemed necessary or desirable in order to complete fully the work as contemplated. Such extra work shall be performed in accordance with the specifications and as directed, provided, however, that before any extra work is started a supplemental agreement shall be tered into or a work order at issued by the engineer.

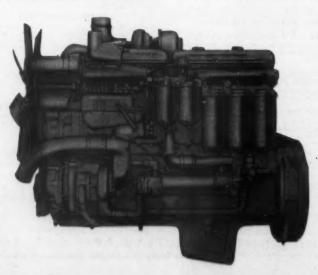
Materials in old structures rep by the contractor and not needed h the state for construction of a te porary crossing may be used by contractor during construction I material shall not be cut or d aged during removal, and it shall h piled in an accessible location wa rected by the engineer.

All material, in both roadway structures, found on the right of way and all material in stru

### How BRAWN-BACKED Payscraper features give you stepped up...loading

From power plant to push-block, the 34-cu. yd. International 295 Payscraper gives you an exclusive combination of features that step up dirt-on-fill delivery! Compare quiet, big-capacity DT-817 Payscraper power. Try the advantage of up or down, on-the-go, Payscraper power-shifting that provides load-speeding automatic direct-drive lockups in second, third, and fourth gears! Measure extra value features like safe, effortless power-steering-that leaves "the steering feel in the steering wheel." Note how exclusive torque-cushioning planetary drive axles add dependability to rough-and-tumble earthmoving! See how 122-inch bowl width speeds loading and unloading-adds control ease and stability, loaded or empty. Prove on your job that bonus performance "rides" the Payscraper bowl. Choose the 2-axle "295"; or 3-axle, 34-cu. yd. "495." See your International Construction Equipment Distributor for a demonstration.

Payscraper power-to-payload punch tops all other rubber-tired rigs-because the fast-slugging, high-torque International DT-817 diesel is the Payscraper power plant! The 375-hp, turbocharged DT-817 gives you direct, push-button starting; allaltitude high-efficiency performance; power for top rim-pull to help speed all steps of the cycle; timesaving "no-lag" control power!



roading

dirt-on-fil capacity!

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then completion of the work and blue acceptance and final payment, is emiractor shall clean and remember from the right-of-way and adment property all material and eximent, restore all property that has been damaged during the prosecution of the work, and leave the microsys unobstructed and the microsy in a presentable condition.

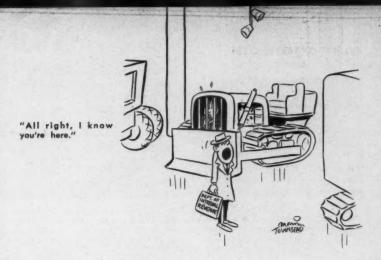
(Nest month's article will deal with speak and Streets: Control of the work and materials.")

#### Gar Wood hoppers placed on national market

■ Gar Wood Industries, Inc., Wayne, Mich., will now market nationally their full line of open and closed hopper trailers through the Gar Wood-St. Paul distributor organization. The trailers have been manufactured on the West Coast for eight years.

#### **Browning names manager**

J. S. Lowrey has been named general sales manager of Browning Mfg. Co., San Antonio. He replaces A. D. Kindig, who retired.





Even "dead" sand comes alive and "boils" fast into the Payscraper bowi. Every detail of Payscraper design aims at speeding the cycle, and staying available! The 21-inch diameter steel cross tube provides super load-bearing strength and resistance to impact. Bowl "backbone," draft arms and side reinforcing members all are massive high-strength box-section steel weldments. "X" member reinforcing maintains perfect push-frame alignment at all times. And the 4-speed, planetary-type, traque-converter power-shift transmission automatically adjusts torque and load to speed — to maintain full capacity!



You steer the 140,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile! Payscraper gives the big control advantages of (1) exclusive International rack-and-pinion plus tandem pump steering system; and (2) 3-degree forward spindle pitch that improves scraper balance and prevents "nose downs" in high-speed turns. The 16-adjustment, bump-smothering seat builds operator confidence, too. And reachesy power brakes, "control tower" vision, and flush deck safety help him deliver full Payscraper capacity, and take advantage of speeds up to 33.5 mph. He commands ample power and traction to pull directly out of 90-degree turns, even on soft fills!



The fast, positive-acting Payscraper ejector mechanism is powered by the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control spreading action. Apron lifts to a big 94-inch opening. Two ejector-plate pushing members apply dozer-like action to force out the whole 34-cu. yd. load cleanly. Action of six heavy-duty springs, stretched during ejection mechanism's estural.

Here's your 76-page cast and production estimating booknewest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, any where! Yours for the asking from your International Construction Equipment Distributor!

International Harvester Co., 180 N. Michigan Ave. Chicage 1, Illineis A Complete Power Package



International Construction Equipment

#### National Constructors moves to Washington, D. C.

■ The National Constructors Association has transferred its headquarters from New York City to Washington, D. C. The new address is Continental Building, 1012 14th St. N.W.

The association, composed of engineering and construction firms engaged in designing and building industrial plants here and abroad, made the move to better serve some of its interests and activities. Among these are the maintenance of good relations with national and international building and construction trades unions, most of which have main offices in Washington.

### Barber-Greene to merge with Smith Engineering

A proposed merger of Barber-Greene Co., Aurora, Ill., and Smith Engineering Works, Milwaukee, Wis., has been approved by the board of directors of each company. The proposed merger is planned to become effective at the end of this month.

Under the plan, the merged company will operate under the name of Barber-Greene Co., under its present officers, with the addition of Gerald L. Smith and Donald D. Barnes as vice presidents and members of the board of directors. Smith Engineering Works will operate under its present management as a division of Barber-Greene. Gerald L. Smith will become president and Donald D. Barnes will become executive vice president of the Smith Engineering Works Division

Barber-Greene manufactures asphalt mixing, paving, ditching, and material-handling equipment. Smith produces the Telsmith line, which includes crushing and screening equipment.

#### USED FLOTATION TIRES

for concrete mixers, batch trucks, road graders. Single; tire replacing. Duals on single or tandem axles.

Write for complete Flotation Catalog.

Harmo Tire & Rubber Corp. 1800 W. Fort St., Detroit, Mich.



About 30 gallons of water per cubic yard of earth brings material in a cut area About 30 gailons of water per cubic yard of earth brings material in a cut are to near optimum moisture content for fills along an interstate route in north-eastern Wyoming. Best results are obtained by sprinkling ground still covered with vegetation. Here, water would not penetrate an impervious layer, and the Rainbird sprinklers were put back to work.

Since water often had to be pumped long distances, Heinzman Sons Engineering Corp., Grand Island, Neb

Corp., Grand Island, Nebr., subcontractor, constructed a dam on a watershed to create a storage reservoir. The Berkeley pump driven by a Chrysler V8 industrial engine drafts from the reservoir and pumps into the long line of 6-inch ABC aluminum pipe.

### Prewet excavati saves costly manipulati

All excavation is being prewatered during a series of grading contracts that are slashing out a new alignment for Interstate Highway 90 across northeastern Wyoming. The new road will run from Sundance to Moorcroft and from Gillette to Buffalo.

Obtaining sufficient supplies of water is sometimes a problem in this semiarid mountainous region. But getting the water into the soil is practically routine for the irrigation specialists who have subcontracted much of the work.

The practice is proving highly successful in spite of a few difficulties. Cuts up to 100 feet deep are being completely prewatered from the surface by sprinkler. Near optimum moisture content is being achieved without the costly manipulation usually required by dry materials on the

Most of the difficulties rea lack of sufficient time for th to percolate to the required Impervious layers of soil have times stopped the percolation of the full depth, requiring ad irrigation after the surface n and the impervious layer have excavated.

#### Completely new align

A glance at the Wyoming re reveals how the present high low roundabout paths between dance and Moorcroft and I Gillette and Buffalo. Under of projects currently under co tion or soon to be let by the W State Highway Department, state Highway 90 will strike o Sundance in a nearly straight Moorcroft. This will reduce th way distance between the tw from 48 to 30 miles.

Full 360°

Adjustab

guide

#### ADJUSTABLE CROWN ASSEMBLY, STOW VIBRATING SCREED CUT PRODUCTION TIME ON BRIDGE DECK BY 50 PER CENT



The adjustable crowned screed in action for the Wiley Jackson Contracting Co.

Contractors confronted with specifications calling for long monolithic pours of various slopes and crowns might well check on the new STOW Screed with adjustable crown assembly which adjusts easily for any slope up to 3". To make the adjustment it is necessary only to loosen the bolts, jack up the center and retighten the bolts.

The Wiley Jackson Contracting Co. had the problem, in Orlando, Florida, of striking off a bridge deck which was 40' wide. Waco Scaf-

folding, Stow Distributor in Orlando, supplied the screed, which was equipped with two Stow Power Paks. According to Mr. Wolford, general superintendent on the job, "We were able to pour much stiffer concrete with this arrangement, and our production time on the job was cut at least 50%."



Close-up of crown adjust feature, showing adjustment

For complete information on the STOW line of Vibrating Screeds, Trowels, Tampers, Vibrators and Grinders, contact your nearest Stow distributor, or send in the coupon below.

	TOW MANUFACTURE	
Dept. B-9	40 Shear St.	Binghamton, N. Y.
Please send me your Screed", and your	our free bulletin "Advantage Concrete Equipment Catalog	es and Use of the Vibrating g 580.
NAME		TITLE
COMPANY		
ADDRESS		
CITY		STATE

For more facts, use coupen or Request Card at page 18 and circle No. 417

angle dri Hydraulie leveling jo Integral p and 100 g

new built-in core barrel guide that level the rig regardless of road c

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Maps indicate county roads on the sportimate route of the new highmit, but parts of these are little than trails usable only under a favorable conditions. Strangely much, the new alignments in some mannes follow the pioneer wagon

one of the typical grading operations was that of Ace Construction Co. Omaha, which held a \$770,000 contract providing for the grading of a 36-mile 4-lane section west of Sundance. Ace started the job and had 280 working days to go. But for a unusually early snows, it would have been completed well ahead of schedule.

#### Water deep cuts

The problem of incorporating marly 50 million gallons of water no the 1.87 million cubic yards of earthwork in cuts up to 100 feet and called for the services of experts. Are subjet the prewatering to Heinzman & Sons, Grand Island, Nebr.

nan built a dam across a rshed near the middle of the b creating a reservoir that supplied water. A Berkeley 6-inch pump, red by a Chrysler V8 industrial e drafted from the reservoir mped into a long line of 6-inch c aluminum pipe. Another similar installed in the line part way the hill boosted the water to the ers with plenty of head to them operating. On the highest the sprinklers were operating evation 4833) 275 feet above the voir, and water was being d through more than 8,000 of 6-inch pipe in addition to the sprinkler laterals.

On this cut, Heinzman installed mains with hydrants at 60-foot metals for the 4-inch sprinkler latter. The Rainbird sprinklers were need at 30-foot intervals on the metals. Each morning, the crew area the laterals to new locations; its save the water time to soak into pround.

such cubic yard of earth required to 30 gallons of water. But the surpenetrated into the ground long, and the sprinklers had to be word often enough so that the water in not pond on the surface and run. Then they had to be brought back win and again to get penetration the deep cuts.

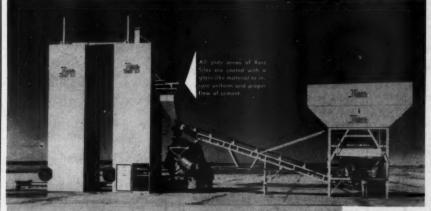
A Sparling 6-inch meter on the line orded a record of the volume of the pumped, and this was commend with the known volume of the to be excavated from the cut.

In prewatering continued until the mixed amount of water had been (Continued on next page)



About half a mile up the line and several hundred feet above the reservoir, another Berkeley pump driven by a Chrysler engine boosts water to a higher elevation with enough pressure to operate the sprinklers. Ralph Little, service man for the watering subcontractor, reads the Sparling 6-inch meter that records the volume of water pumped. This is a pay item.

### STATIONARY CAPACITY plus PORTABILITY



HIGH PORTABILITY

ECONOMY

The new Ross 60-3 high-capacity particle batching plant and two highly portable 350-8 Budget Elevator Coment Siles gives the industry the enewer to the search for periodility with stationary capacity. Designed for legal highway travel, the Ross plant can be in operation within a few hours of arrival at the jointie and can be disassembled and moved in less time.

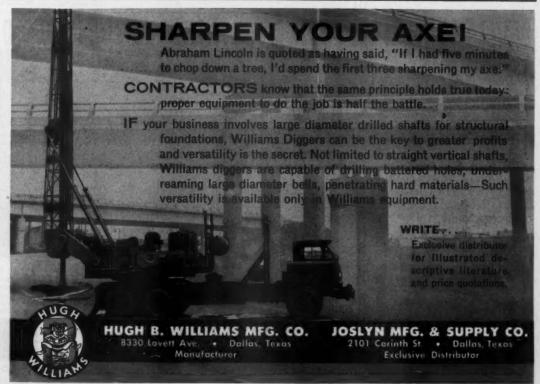
ROSS . . . AMERICA'S MOST IMITATED PORTABLE BATCHING EQUIPMENT

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

STATIONARY CAPACITY

ROSS PORTA-PLANT

PORTABILITY IS NO SIDE LINE WITH USI

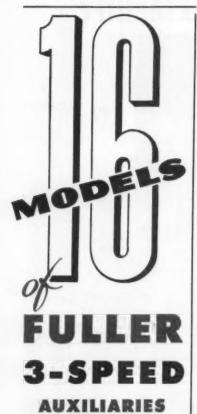




Scrapers move onto the job after water has penetrated the cut areas. The DW20 is being push-loaded by a Michigan 380 tractor-dozer. A rear push plate on the Michigan is for double push-loading.



A Cat D9 uses an Ateco ripper to make a shallow cut through a sand-rock oping. Repeated shallow ripping broke up the material so that it could be and worked into the fills very easily.



Specify FULLER ... Specify the MODEL Get the 3-speed auxiliary designed for your job.

HIGH CAPACITY . . . WIDEST RANGE OF RATIOS . . . OPTIONAL TOP-MOUNTED POWER TAKE-OFF . . . LOW INITIAL COST, LESS MAINTE-NANCE . . . AVAILABLE FROM ALL LEADING TRUCK MANUFACTURERS ON SPECIFICATION

> Specify Specify the MODEL

Choose from 16 Models of FULLER Three-Speed Auxiliaries

**FULLER MANUFACTURING COMPANY** (Transmission Division)
KALAMAZOO, MICHIGAN

For more facts, circle No. 421

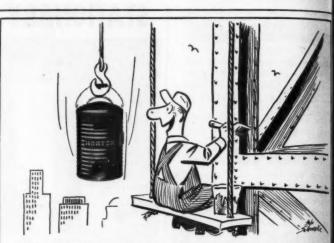
(Continued from preceding page)

incorporated into the ground. Frequent sampling was made with an earth auger to find the depth of penetration.

The prewatering always proved most satisfactory when the water could be applied before the natural vegetation covering the ground had been disturbed. This meant that the pipe lines had to be strung and sprinklers set, moved, and maintained ahead of the pioneering. The irrigation crews found that a Jeep and a 4-wheel rubber-tire trailer provided the right combination of speed and agility to satisfy their needs.

The Jeep worked its way up and down the steep hills and through woods to reach the tops of the highest cuts. Even with a trailer load of 30-foot joints of aluminum pipe, the versatile Jeep made its way over the rugged countryside. Once the sprinklers were in operation, this same Jeep carried fuel to the pumps and sped the workmen from place to place.

CAPACITIES: 20 to 32 tons DECK LENGTHS: 18 to 43 B.



ASK THE MAN ON THE JOB . . HE WOULDN'T BE WITHOUT HIS HORTON

Horton Water Coolers keep water colder, longer — keep men happier on the job. Thousands of city departments, utility com-panies, service companies and contractors use Horton Water Coolers exclusively.

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COOLERS

HORTON EQUIPMENT CO. P. O. Box 2611 Houston 1. Texas

### MOVES with the JOB! NO CONCRETE PITS!



#### Portable Truck Scale OTHER THURMAN SCALES:

PIT . WAREHOUSE . INDUSTRIAL . WHEELBARROW LIQUID WEIGHING . BATCHING . AUTOMATIC

HURMAN Precision Scales

THURMAN SCALE COMPANY, 1939 REFUGEE ROAD DEPT. CE-2, COLUM



lough cuts were effectively prewatered, some watering had to be done on the la. At this point, a DW20 scraper is unloading and an American sheepsfoot and app 50-ton roller, both pulled by D8's, are compacting the fill.

### from the BUTLER ENGINEER

... of unbelievable accuracy in tunneling , and a Star at the Ready Mixed Show

A really great engineering feat! Blue River Constructors have just completed the boring op-ention for the Roberts Tunnel der the Continental Divide. But man, that hole is 23.27 miles long. Bored from both sides—and when the two crews met in joining they were only 1¼" off sideways and only 2" from top to bottom! 23.27 miles is 1,474,388.04 inches. Percentage wise the margin of error is 1.25 ÷ 1,474,388.04. Aw, you agure it. My slip-stick can't at that low.

HORTON

keep men

ility com-er Coolers

our page

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2611

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ROAD

squat that low.

And we're no end happy to report that the equipment to line the tunnel with concrete will be by Butler.

Highly automated equipment shown at the Ready Mixed show. All of it good, too.

but Butler Bin popped up with great new advance in a con-rol system. Designated as the P, it requires only setting two ials and touching one push utton for a complete batching ration.

selections are obtained by but we call a Mix Capsule.

The property of th itter to get the amount of mix you want in incre-nts of ½ cu. yds.

be SP is so completely autoaced, so thoroughly intercked and so darned simple
absolutely fool pr—(no,
don't like that word.) Let's all it absolutely human-proof. Not by our vote — but by the concensus of hundreds of Ready Mix owners attending the Show, Butler is again a great big step ahead of all the rest. Write for the SP Bulletin.

The Butter Engin BUTLER BIN COMPANY WAUKESHA. WISCONSIN

For more facts, circle No. 424

The Michigan State Highway Department is planning to build rest areas at 29 locations on the state's 1,076mile Interstate System. Rest areas on the new freeways will be located from 40 to 60 miles apart.

A few accessories that add versatility:





### ROOSA MASTER Most Versatile

Diesel engine manufacturers, their designers and engineers are specifying ROOSA MASTER because they know that it is the most versatile. There are many reasons for selecting this pump. Here are just a few:

- VERSATILE because of the variety of built-in, space saving, accessories demanded by modern diesel engine design. Roosa Master can provide more compact, lower cost, complete units to meet many different applications.
- VERSATILE because only one size pump serves either a 2, 3, 4, 6, or 8 cylinder, 2 or 4 cycle, small or large displacement engine . . . and only Roosa Master can be mounted vertically or horizontally.
- VERSATILE because it is applicable to automotive, construction, farm, generator, marine and stationary equipment guaranteeing dependable, economical service. Write for further information.





HARTFORD MACHINE SCREW CO., HARTFORD 2, CONN. DIVISION OF STANDARD SCREW COMPANY

For more facts, use Request Card at page 18 and circle No. 425

#### Scrapers move earth

After allowing as much time as could be spared for the water to penetrate and be dispersed. Ace moved in a spread of scrapers and started taking out the cuts. Four Cat DW20's and a DW21 moved most of the earth with the assistance of a D9 pushtractor equipped with an Ateco ripper. Michigan 310 and 380 rubbertire tractors worked on the job on demonstration push-loading and dozing. One of the new Cat 619 tractorscrapers was also demonstrated.

Other machines in the spread included two D8's, each pulling an American sheepsfoot and a Tampo 50-ton rubber-tire roller; a D9 dozer; a D8 with Cat 463 scraper; and two Cat No. 12 motor graders.

#### Water from wells

On another of the contracts, the prewatering contractor drilled a series of wells to obtain the required volume of water. This was on a 6.5mile grading contract held by Roth

(Continued on next page)



Take advantage of these new features that are time and money savers for you! Forced ejection saves you operating time and manpower by providing a positive — controlled dump. Larger tires make the heavier, improved scraper more maneuverable. New, improved drive means heavier loads with less horsepower than ever before . . . 7½ yard and larger capacities. The new Hancock Scraper can be pulled with either the 830 or 730 John Deere, or similar industrial tractor, with front wheel dolly; or by direct connection to tractor. For "Engineered" help with your earth moving problems, contact Hancock today!



MANUFACTURING COMPANY PO 3-8297 P. O. BOX 1359 LUBBOCK, TEXAS

Construction Co., Rapid City, S. Dak., including about 1.2 million



On another grading contract in the On another grading contract in the area, the watering subcontractor obtained water from a group of shallow wells. The one above is typical. A 2½× 2-inch Berkeley jet pump, driven by a Briggs & Stratton gasoline engine, sends water through 4-inch aluminum pipe to a manifold leading to a ground water tank, below, that has been scooped out by a dragline. Another Berkeley unit pumps water into Ames scooped out by a dragine. Another Berkeley unit pumps water into Ames 6-inch Lo-Hi aluminum pipe that runs to sprinklers on the cut. This pump brings water 2½ miles through 6-inch pipe and a mile through 4-inch pipe with a special pipe and a mile through 4-inch pipe with the second pipe and a mile through 4-inch pipe with the second pipe and a mile through 4-inch pipe. with a static head of about 200 feet and still operates the sprinklers without



#### Measure tool cost by ENDURANCE ... not price!



While "bargain buys" are wearing out and being replaced; sturdy Brunner & Lay tools are being used, reconditioned, reused again and again. Order from local Brunner & Lay dealer, request catalog §759.

Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. Est. 1882. Plants and conversion shops: Albuquerque, Asheville, Birningham, Dallas, Denver, Dorchester (Boston), Long Island City, Los Angeles, Philadelphia, Sacramento. Seattle. Yardley (Spokane), Seattle, Yardley (Spokane)

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carbide ROK-BITS - DRILL RODS - INTRA-SET STEEL COMPLINGS, ADAPTERS, SECTIONAL STEEL STREEMS BARS. Standard or ROPE threeds. MOSL POINTS, CLAY SPADES, ASPRALT CUTTERS, 40.

For more facts, circle No 454

cubic vards of earthwork. The prewatering subcontractor was Cruise Drilling Corp., Broomfield, Colo.

Since no reservoir was available, Cruise drilled eight wells in a watershed. These wells ranged from 50 to 75 feet deep and had 6-inch casings. Six of them were fitted with Berkeley 21/2×2-inch jet pumps and the other two with Berkeley 21/2-inch turbines. The discharge from the eight scattered wells was collected in an aluminum pipe manifold and delivered to a ground tank.

A Berkeley 6-inch pump powered by a Chrysler 52A engine drafted from the pit and pumped the water through as much as 21/2 miles of 6-inch and a mile of 4-inch pipe to

the Rainbird sprinklers. This was Ames Lo-Hi pipe with ring-lock couplings. The big pump and the sprinklers usually ran 16 hours a day, but the wells were pumped around the clock to maintain the supply.

One of the difficulties at this location was to get the water down through the clay soil. Sprinkling for 16 hours and then allowing 8 hours for percolation helped, but some of the cuts had to be rewatered after part of the material had been excavated.

Roth's Caterpillar scraper spread encountered coal in a number of cuts. This had to be removed and wasted since it was unsatisfactory for embankment material.

On these and other jobs along the road, contractors experienced almost uniformly satisfactory results. material came out of the cuts win near optimum moisture so that a could be placed directly into the bankments and compacted with minimum of effort and without me nipulation. Only an occasional she of water from a water truck was no quired to compensate for the evapo ration.

These contractors, who are accur tomed to working with the bone-dry material encountered in this ari region, found that they could com up with more uniform and satisfac tory compacted embankments will the prewet material than they han been able to produce by other methods. In most cases, the total cost w also less. Part of the lowered cost wa attributed to the fact that prewate.

If you know MANGANESE, you'll like this new electrode!

### STOODY NICKEL MANGANESE

WITH IRON POWDER COATING



results. The the cuts with re so that a y into the m. acted with a d without ma ccasional abox truck was re for the evapo-

ho are accu the bone-dr in this ari ey could con and satisfa nkments wa nan they have y other methtotal cost was that prewater.

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ng lessened the dust condition. On the Ace Construction Co. job, I I Sorenson was superintendent; J. M. Crilly, office manager; and G. C. Schaar and Preston McDonald, shift foremen. Verne Leuders was superinundent for Heinzman on the irrigation. Robert Schurger was superintendent for Roth Construction Co.,

and Don Prederick supervised the irrigation for Cruise Drilling Corp. The projects were supervised for the Wyoming State Highway Department by resident engineer C. J. Toner and his two assistants, Wayne Fox and William Hibbard. They report to district engineer George R. Anderson of the Sheridan District. R. G. Stapp is state construction engineer. J. R. Bromley is chief engineer of THE END the department.



A LORAIN CRANE loads an Inter-national Model 65 Payhauler with dolomite at the New Hope Crushed Stone & Lime Co. quarry Crushed stone & Lime Co. quarry near New Hope, Pa. The company produces specification aggregate of all sizes for construction and road building. The Payhauler negotiates a 90-foot rise in a 600-foot stretch while hauling from quarry to crushing alont ing from quarry to crushing plant.



"tops" both for joining of parts and buildup of worn areas on all manganese steel equipment.

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	es on manganese steel; 18 Rc. as work-harden	

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ND ENG

### **Earthmovers under the spotlight**

Design engineers told shortcomings of today equipment, what is expected of tomorrow's



Participants in the Contractors' Panel Discussion are (left to right): E. D. Williams, president, Williams & Bessert, Trivoli, Ill.; G. G. Werner, Jr., vice president, Merritt-Chapman & Scott Corp., New York City; M. A. Robinson, director of procurement, Morrison-Knudsen Co., Inc., Boise, Idaho; C. F. Replogle, president, C. F. Replogle Co., Circleville Ohio; and L. P. Gilvin, president, Gilvin-Terrill, Inc., Amarillo, Texas.



iled Model 210 A-W crane inches 18-in. cast-iron water main into position in San

### How A-W crane speeds pipelaying

"The more we use our 3-year-old Austin-Western hydraulic crane, the more uses we find for it," states B. K. Stoneman Sons, Inglewood, Calif., mechanical contractor.

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is a real time and money-saver!"

Austin-Western now offers a complete line of lift, carry and place equipment. 5 models—capacity ranges up to 11 tons. Wide choice of optional equipment for added versatility. Available selfpropelled, truck or stationary mounted. No other crane offers you all of the profitable advantages and quality construction features of an Austin-Western. Let us prove this to your satisfaction. Write for all the facts or ask your nearest A-W distributor.

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CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

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New developments in earthmoving equipment-particularly those affecting the power source-and the outlook for these basic construction machines in the decade ahead were brought under the spotlight last month at the 11th annual Earthmoving Industry Conference.

Seeing Ahead in Earthmoving was the theme of the 2-day conference, held in Peoria, Ill., under sponsorship of the Central Illinois Section of the Society of Automotive Engineers. Some 1,800 engineers and other representatives of manufacturing firms, as well as officials of the U.S. Army

Corps of Engineers and other inte ested persons, attended the se

Highlights of the program w talks on electrical equipment a earthmovers, diesel and gas-turbin engines, and the use of computers earthmoving, and a contractors' per discussion on earthmoving equir requirements in the next decade.

Five prominent contractors repr senting firms engaged in various type of earthmoving took part in the pane addressing their remarks directly the manufacturing engineers in a tendance. They pinpointed shortcom ings of equipment currently available



practical design. There's no waste on "trimmings"; yet every desirable feature is there,

from the durable box type frame with full belt protection to the convenient, accessible, under-

slug motor. Next, this plant is extremely versatile — there is a wide choice of vibrating

screen sizes and models, both single and mul-

screen sizes and models, both single and mut-tiple deck. Feed accessories are available for either "push feeding" or "top feeding". And it's all fully portable without disassembly, except for multi-deck screens, which should be removed

Topping all these features is the truly amazing performance of the KOLMAN Vibrating Screen — heart of the whole plant. You'll get maximum production from it in all types of work, and your plant will be properly balanced because the KOLMAN Conveyor and KOLMAN

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tally as regards maintenance od set forth the needs of a changing try as they saw them. the rapidly changing needs of the

vary are making new demands on enfacturers of earthmoving manery, Lt. Gen. E. C. Itschner, chief the Corps of Engineers, told the mbly in the keynote address.

Because military needs of the fuwill be radically different from of the past, "a bold imagination, siveness, and courage are needin the earthmoving industry to these needs," the general de-Machinery of considerably ater mobility and versatility will needed in any future war, he said. The Corps chief showed slides deing equipment developed by the ps both for earthmoving and asporting personnel, and he comnied that such versatility will be "must" in machinery employed in me wars.

#### Greater dispersement

Operations in the next war will be re widely dispersed than ever before because of the susceptibility of centrations to missile attack," n. Itschner told his audience. Therefore, we will need more pipees, more railroads, and more roads m accommodate this dispersement."

The general said the army hopes earthmoving equipment of the future can be nuclear-powered rather than propelled by conventional fuels. He also recommended a simplification of controls on future earthmoving machines.

L. P. Gilvin, president of Gilvin-Terrill, Inc., Amarillo, Texas, construction firm, led off the contractors' panel by telling the attending engineers that contractors today want earthmoving equipment that lends itself to easier dismantling, because of the problem of hauling such heavy equipment over highways from one job to another. He also cited the need for manufacturer attention to the equipment problems of the medium and smaller jobs, also stressing the need for mobility and versatility.

Features that contractors want in earthmoving equipment were listed by C. F. Replogle, president of C. F. Replogle Co., Circleville, Ohio. These include dependability (operating efficiency), safety, high availability, preventive maintenance, productivity, and easy replacement of components.

In particular, the Ohio contractor asked for cooperation from the manufacturer in maintenance of the equipment, by way of preventive-maintenance aids, and better guarantees (Continued on next page)

J. M. Stephenson, project engineer for advanced gas turbines for the Lycoming Division of Avco Corp., discusses the place of the gas turbine in off-highway equipment at a session of the Earthmoving Industry Conference.



Pennsylvania contractor chooses—

### **ALL-WHEEL DRIVE AND STEERING!**

"We chose an Austin-Western Super 100 grader because we're a growing construc-tion firm and need a single all-purpose grader that will handle an entire highway job from rough to finish grading."

#### All-wheel steering

"We've found it to be powerful, fast-working and dependable. All-wheel steer-ing's slick. It lets you work the A-W in and out of tight spots where other make graders can't even go.

"Our operator is sold on it too. He likes the extra power he gets from its all-wheel drive. He says it's easy to maneuver and hydraulic controls make it easy to operate.

We also bought an Austin-Western Roller-Compactor at the same time we bought the grader. Both have been dependable, trouble-free machines. S. P. Mehring, Mehring Construction, Hanover, Pa.

#### Super, Pacer models

All-wheel drive and all-wheel steering are exclusive with Austin-Western grader

line. These two features help make A-W the one grader that will perform every grading job with equal ease and precision; rough or finish. Ask an A-W owner or operator; learn what he has to say.

A-W graders are available in 6-wheel Super and 4-wheel Pacer models. Weight classes from 16,000 to 30,000 lb.; horse power ratings from 106 to 143 hp. Get all the facts; ask for a demonstration. Just contact your nearest A-W distributor.



P. Mehring's A-W Roller Compactor lays es on highway construction project. Vibratory achment available for most makes of 3-wheel

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CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL

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Power graders Motor sweepers . Road rollers



More than 1,800 manufacturers' engineers and other representatives, as well as Corps of Engineers officials, filled the Madison Theatre, Peoria, ill., for sessions of the Earthmoving Industry Conference.

president of Merritt-Chapman & Scott Corp., New York, declared. He predicted such developments as nuclear power, all-wheel drive, and reduction in moving parts, but said that manufacturers still have a job ahead of them to match the needs of the new earthmoving industry.

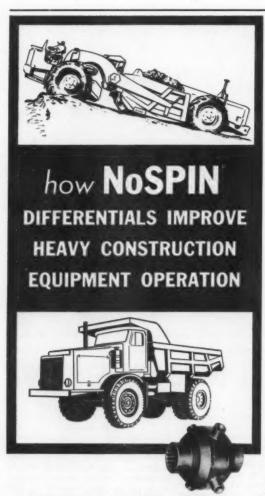
#### Greater study of rubber

The M-C&S executive called for greater attention to capacity, efficiency, ruggedness but at the same time light weight, and lower capital cost. He said more research is needed on rubber because of the growing use of rubber-mounted earthm:vers, and he suggested that manufacturers investigate the possibility of a self-cleaning body for heavy dump units.

E. D. Williams, president of Wil-

liams & Bessert, Trivoil, Ill., constion contractor, described the sof the smaller contractor engage conservation work and asked parallarly for machinery that lends at to easier maintenance. Particula he spoke of the need for easier mods of keeping track equipment as

During the question-and-apperiod that followed the separatalks, several points came up, of speaker said that he had found on manufacturer's brakes satisfied by the several points of operating earthering and hauling machinery. Anothering and hauling machinery. Anothering and hauling machinery had back to the factory whenever possible to overhaul rather than do it in a company shop, because of the cost of labor. One contractor agested it would be a good idea if a gested it would be a good idea if a



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## quately field-tested before it is sold to contractors. Replogle also urged the engineers to support the federal highway program, which he said is "in jeopardy," by writing their congressmen and "getting the word to the people" about the nation's highway needs.

(Continued from preceding page)
that new equipment has been ade-

M. A. Robinson, director of procurement for Morrison-Knudsen Co., Inc., Boise, Idaho, asked the manufacturers' engineers to keep in mind "mobility for the small jobs and productivity for the big ones" in designing new machinery. He said contractors would be interested in the use of abrasion-resistant steels for earthmoving rigs; more efficient, unitized design of rigs to make component replacement simpler; aid from manufacturers on preventive maintenance; and more instruction schools for operators of the more complicated rigs.

The requirements of the next 10 years "are going to tax manufacturers' brains," G. G. Werner, Jr., vice



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CONTRACTORS AND ENGIN

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AY, 1960

Engineers and others who attended the conference had a chance to study this fullscale General-Electric gas turbine engine, which was displayed in the lobby of

facturers' engineers and equipent designers got out in the field of operated the equipment they

The gas-turbine engine came in for nsiderable discussion during the onference, L. J. Nuttall, project enineer of the Small Aircraft Engine ivision of General Electric Co., ested the development and potenal applications of the new-type enne, pointing out that for best realls the gas turbine will require a siched transmission and special dem of the earthmover. He spoke also out the use of the electric wheel er with gas-turbine machines.

The key to the gas-turbine engine me exploiting its light weight and all size to the limit, J. M. Stephenproject engineer for advanced turbines, Lycoming Division of two Corp., declared. He warned that nic fuel consumption is not the rtant feature of these engines, that the saving in size and weight the power housing area of the over is the feature of most tage. He spoke of the need for designs in transmissions to h the light weight of the gas

#### **Electrical equipment**

High-durability electrical equipment for earthmovers was discussed by W. C. Edmundson, executive engineer of the Delco Remy Division of General Motors Corp., who treated future concepts of dc and ac charging equipment, regulators, and starters designed to give more reliable performance in the earthmoving machinery field. The applications and advantages of electrical remote-control systems were presented by J. T. Osterman, Chicago district manager of the Electrical Products Division. The Electric Auto-Lite Co.

A review of the situation as regards diesel-engine cold starting was offered by L. P. Atwell, product manager of the Spark Plug Division of The Electric Auto-Lite Co. He described some of the common methods employed at the present time, along with their respective advantages, and discussed the research and testing being done on the application of lowvoltage ignition to cold starting of diesels

turbines, and said that problem is being worked on now by designers.

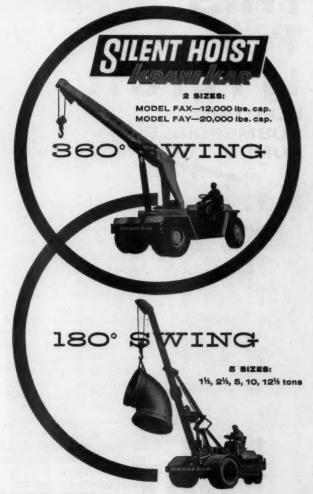
Basil Mikhalkin, senior application specialist for Bendix Computer, a division of Bendix Aviation Corp., presented a paper on the use of computers in earthwork. He described such use to date, as well as new uses foreseen by computer designers. He admitted that the high cost of existing computers is holding back widespread use of these machines in earthwork design and planning, but he said that these costs are being worked down to the point where use of the machines will be practical in the not too distant future.

The fuel-cell power plant, which develops combustion without generating heat as in other power sources, was described by Dr. H. K. Ihrig, vice president in charge of research for the Allis-Chalmers Mfg. Co.

The man who supervised the construction of the AASHO Road Test, W. E. Chastain, Sr., engineer of physical research for the Illinois Division of Highways, described the construction of that facility, showed a motion picture made at the site, and told the assembled engineers of the problems encountered in trying to meet the exacting specifications required. He discussed the actual building of the road, the installation of testing devices, the preparation of test vehicles, and the compilation of data recorded by the testing devices.

Chastain emphasized the prime importance of earthmoving machinery in building highways, and pointed out the necessity of manufacturers pretesting equipment adequately before it is put on the market. THE END

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Scrapers-two 23-TDT's and a Euclid S-18-work with a D8 dozer to fill in a small creek bed at Salina, Kans., during work on the levee and channel system that will protect the city from floodwaters. The levee cuts off the flow in the creek. Scrapers handled most of the earthmoving, eliminating much dragline work.

### Tough levee job tackled by scrapers

THIS ... Is Modern Performance by FLYGT! SUBMERSIBLE PUMPS

One drainage job. One 3" Flygt pump. Put them together and you've got action - 340 GPM at discharge; heads to 170 feet or higher in tandem. This is typical performance from Flygt — the only pump that can cut your pumping costs — handle your drainage and dewatering jobs in less time. All other models in the Flygt line, ranging in discharge sizes from 1½" to 8", and capacities to 3100 GPM with heads to 220 ft., give comparable excellent performances. Flygt electric submersible pumps are solving difficult water problems on thousands of jobs all over the world. Fully portable, they go right in the water - start pumping immediately, giving day and night performance without supervision and only occasional inspection. Rugged, simple, fool-proof, economical — Flygt pumps are the modern approach to drainage and dewatering. Get to know Flygt by writing for illustrated brochure, then ask your local distributor for an on-the-job demonstration.

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1868 Ninth St. (Corner of Olympic) Santa Menica, Calif. PUMP BETTER ELECTRICALLY - USE FLYGT!

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Well maintained scraper fleets kept the dirt flying on a 16-mile levee system protecting Salina, Kans.

Although cut areas were often wet. the versatile scrapers were able to move most of the dirt. Scrapers were pulled instead of pushed to load the wet material at times; this eliminated much of the dragline work.

The contractor responsible for this work, J. D. Armstrong Co., Inc., Ames, Iowa, kept production consistently high by taking good care of its equipment. A well planned preventive-maintenance program kept earthmover downtime to a minimum.

#### Flood of '51

The people of Salina (population, 38,000) were glad to see the scrapers at work building the wall of dirt around their city. They remember 1951, when the waters of Smoky Hill River, Saline River, and Dry Creek swirled through the streets and flooded all but two small areas of the community.

At the request of citizen groups, the U.S. Army Corps of Engineers made a study of the possibility of levee system to protect the low-ly city. The protection system was en tually approved and designed, a funds were made available by Co gress. The government is spen approximately \$3,760,000 in com tion with construction of the proj The city of Salina is spending a proximately \$1,840,000.

The levee-channel system con of about 16 miles of earth levee ge erally surrounding an area about miles long and 2 to 3 miles wide T levee is not continuous, for in sen places natural high ground serves purpose of an earth dike, Seldom ing more than 15 feet above ground, the levee is built with 3 t slopes and is 10 feet in width fer service drive.

#### Channel changes

The city is further protected from high water by channel changes in the Dry Creek and the Smoky Hill ri Instead of flowing through Salina, waters from a major portion of the Dry Creek watershed are being d



Unit for unit, Ridley Concrete Gun Rigs will put more concrete in plac at less cost than any other rig or method available.

#### YOU'LL CUT COSTS 3 WAYS

- COST OF EQUIPMENT—Despite their efficiency, Ridley Rigs are priced substantially below others.
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Available in any type of truck chas-Write for technical data and mod

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A muddy bottom prevents the TD-24's from pushing an Interna-tional Payscraper in excavating the Dry Creek diversion channel, but the tractors, working on the comparatively dry slopes, use ca-bles to pull the scraper. When the Payscraper is loaded, it will be unhooked; cables remain attached to the tractors.

d to the Smoky Hill River to my the flow east of the city. The don is made by means of a 100-foot-long channel, located th of the city, which is 40 feet at om and 160 plus or minus at top. The winding Smoky Hill River is ng straightened out by means of off channels so that it can carry greater stream flow. The cutoff nnels eliminate several large bends n the river that would otherwise alwater to pass inside the levee

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On the most extensive cutoff, one aile of new channel replaces seven alles of winding river. In order to 0,000 in conne lig the channel, S. W. Hardwick Co., ardstown, Ill., the general contracor for this section, had to make cuts p to 72 feet deep. In contrast to rmstrong, Hardwick primarily used raglines for the excavation. earth levee gen in

#### Complicated cutoff

This particular cutoff was compliis, for in seen this particular cuton was compli-round serves a sted because a minimum flow has to like. Seldom is a maintained in the original 7 miles feet above at the river bed. The water is neces-built with 3 to any to serve the facilities of a power in width for plant and a mill located on the river naide the levee system. In order to gulate the flow of water through the original river bed, crews had to protected in suid earthen control dams with conel changes in a structures where the river bed moky Hill rise attracted the levee. The desired ough Salina a keep floodwaters out of the town, portion of the they maintain sufficient flow augh the control structures to permit the operation of the plant and the mill.

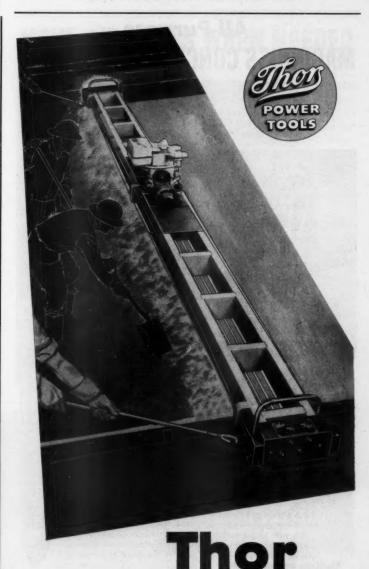
Construction of the levee system is being done in four sections. The work on Section 1 was completed by Amino Bros. Co., Kansas City, Kans. Section 2. which involves about 4 miles of levee and a deep 1-mile-long cutoff, is being done by S. W. Hardwick Co. Sections 3 and 4, containing a combined total of about 2 million yards of excavation and 1 million yards of fill, are being handled by J. D. Armstrong Co., which expects to complete its work this summer. The Corps of Engineers, which is supervising the construction, anticipates that Salina will-except for the construction of two interior drainage pumping plants - have full flood protection by the end of 1960. The pumping plants are expected to be completed during 1961.

#### Scrapers get most of dirt

For excavation of the cutoff channels, as well as construction of the levee, J. D. Armstrong Co. made extensive use of its large fleet of scrapers. A combination of tractor-drawn and rubber-tire rigs was able to move almost any type of material. Hauls were from several hundred feet to a mile long. Normally, the sandy clay was taken from diversion channels or cutoffs and hauled to the banks of the levee. The material was then spread with dozers and compacted with sheepsfoot rollers.

Sometimes, it wasn't easy to scrape (Continued on next page)

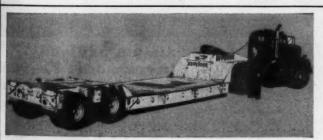




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Versatile Thor Screeds let you strike-off, compact, finish concrete slabs in one low cost operation. Lightest weight screed on the market...two men can handle, easily. Exclusive "StraPaction" vibration produces direct vibration along the entire length of the screed to the slab. Produces high-quality, hard surfaced slab. Cuts production time and costs on floors, runways, driveways, sidewalks, bridge decks; roof decks, tilt-ups, precast slabs, highways, and streets. Use inexpensive forms or pipe rails. Choose from 4' to 30' models. See them in action at your Thor distributor. Thor Power Tool Co., Aurora, Ill. Branches in all principal cities. principal cities.

For more facts, use Request Card at page 18 and circle No. 440



"Buddy" Clark, Manager Superior Trucking Co., inspecting his Birmingham Lowbed after 300,000 miles.

#### 300,000 MILES—and still going! MR. CLARK LIKES HIS BIRMINGHAM LOWBED

Superior Trucking Company, Inc., of Atlanta and Birmingham, is a leading heavy hauler in the South. Their experience has proved to them that Birmingham Trailers really are built for "rugged wear over the long haul."

"The Birmingham Lowbed shown in this photograph," writes Mr. Clark, "is still in excellent condition after 300,000 miles of satisfactory service."

(Write for Catalog)

#### BIRMINGHAM MANUFACTURING COMPANY, Inc.

14 S. 55th Street, Birmingham, Alabama, Phone WO 1-6183 PLATFORMS TOTEM-ALLS LOWBEDS

For more facts, use Request Card at page 18 and circle No. 439

MY, 1960

#### The Campbell Sliding Cab - for models HU, HH, HO, H30R, H50, H70, and H90 "Payloaders"!!!



This sturdy, modern design offers fea-tures long desired by "PAYLOADER" operators, among them—Sliding top, operators, among them—stiding top, ball bearing mounted on steel channel -Rubber seals to insure weather tightness—Permanently mounted access ladder—Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloader" Cabs by calling your "Payloader" distributor, or contact

#### CAMPBELL DETACHABLE CAB CO. WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 441

### **All-Purpose** MAGINNISS CONCRETE VIBRATORS



Powered by a constant-speed 180 cycle 120 volt induction type motor located in the vibrator head for maximum efficiency, Hi-lectrics produce variable frequencies up to 10,500 V P M and maintain constant speed at all times—they do not slow down and lose vibrating effectiveness even under full load in stiffest low-slump concrete! This means you can use all purpose Hi-lectric Vibrators on any job, no matter what the concrete specifications may be.

Because pours are completed faster, labor expense for the entire crew is reduced. One-man operation cuts vibrating costs, too. The Hi-lectric power unit can be located as much as 200 ft. away from the work site-the vibrator operator is free to move about on the forms unhampered by cumbersome, unwieldy flexible shafts. What's more, with blemish-free surfaces, costly hand finishing is eliminated.

Ask your Maginniss distributor to demonstrate on your present job-he'll show you how Hi-lectric equipment can cut your concrete placing costs. You'll find him listed in the Classified Section of your telephone directory.

> Simple, rugged construction of Hi-lectric motor-in-head vibrators keeps nce cests at a minimum. There are no brushes, commutate or armature windings to burn out.



MAGINNISS POWER TOOL COMPANY

every job!

STRUCTURAL VIBRATORS (188 Cycle Heavy Duty)	MAGINNISS POWER TOOL CO.
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A spread of five Cat D8's pulls 18-yard scrap-ers moving dirt to a channel block on Section 4 of the project. In the background, Euclid scrapers from a different spread cut out dirt for a channel change. Euclid



(Continued from preceding page)

material out of a channel bottom. Because of the muddy bottom, the push-tractors could not get sufficient traction to load the scrapers. Rather than go to a dragline operation, the contractor had scrapers pulled by two push-tractors that were working on the dry sloping bank of the channel. A cable, about 25 feet long, was hooked from the back of each tractor to the front of the scraper. After the scraper was loaded, a man on the ground disconnected the cable from the scraper. The cables remained attached to the tractors.

There were occasions, how when the material was too wet to loaded by scrapers. In this even dragline cast the material to of the scrapers, and the haul on as usual.

#### Good mainte

With some 20 scrapers and porting equipment on Arm two contracts, it was no small keep all the rigs in running tion. Well trained maintenant however, greatly reduced the time by checking over each p



#### Designed for maximum payload ... the new Etnyre model FX-500

Talk about payload! Compare these Etnyre capacities to your state himits: 1550 gallons for single 18,000# axle

1690 gallons for single 20,000# axle 1840 gallons for single 22,400# axle

You can count on similar greater maximums on semi-trailer single a tandem axle mountings too! And dependable operation, and unifor accurate distribution are always typical of the results you can expe from an Etnyre. Look at the sharp, clean edges and the even distrib in the above photo of an Etnyre FX-500 and you can see the resu Etnyre's exclusive triple-lap coverage.

#### OTHER FX-500 QUALITY FEATURES:

Hardened aluminum jacketing over 2" Fiberglas insulation which is reinforced molded asbestos blocks
 Stainless steel jacket near burners and exhaust stacks
 Steel heat jacket for pump
 Aluminum fenders and mud flaps.

You're familiar with Etnyre's accuracy and dependability . . . now y can get maximum payload too . . . for maximum profit. Investig today — find out how a "Black-Topper" can handle more work . faster . . . better . . . more economically.

SEE YOUR ETNYRE DEALER

ETNYRE "Black-Topper" BITUMINOUS DISTRIBUTORS



daily. The lubrication men and oiled the rigs according a fixed schedule, and they also an eye out for impending mefailure. Equipment was of the line during the 8-hour for greasing and oiling, and tenance check. During the night shift, no preventivece work was done.

e office was kept informed performance of the equipment itten daily report made on The report summarized the worked by the rig, the hours time, and the repairs and essary to get the rig back peration. Twice a week, the rewas mailed to the home office. report also served to make the ndent on the job aware of

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X-500

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ND ENGINE

IS:



With a D8 pushing and another pulling, a Cat 80 scraper picks up a load of clay to be carried to a channel block.



A flagman stops traffic as a Euclid S-18 crosses a busy highway on its way to the cut area. Euclids made up one of the four spreads.

In this event naterial to TYING IS A Snap d the haul when you use Sterling RE-BAR TIE WIRE

NEW SPEED, SAFETY and EFFICIENCY

Re-Bar Tie Wire for the ndy reel dispenser worn on the saves you time and money! man can make up to 25% more per hour than he can with clumsy er coil" methods. Sterling is tougher, stronger . . . easily orked" to step up efficiency and duce firm, snug ties. Take adantage of the speed, safety, and ey-saving benefits offered by his better way of making better ties.

#### See Your Distributor



merting Re-Bar Tie Wire is available 20 tells to the box. No. 14 or No. 16 wire.

NORTHWESTERN STEEL AND WIRE COMPANY SINCE 1879 STERLING, ILLINOIS

For more facts, circle No. 444 AY, 1960

just how well the equipment is performing.

Good preventive maintenance kept production consistently high. On Section 4, an average of 10,000 cubic yards was moved during an 8-hour shift.

This production was accomplished with four scraper spreads. The first spread was built around five Cat D8 tractors pulling 18-yard scrapers. The second spread included three LeTourneau-Westinghouse Model C scrapers loaded by an International TD-24 tractor. Not partial to any one particular color, Armstrong had a third herd of pea-green Euclids; the two S-18 scrapers and six 23-TDT scrapers were push-loaded by two International TD-24's in tandem.

For J. D. Armstrong Co., Roy Cheek superintended the work on Section 4, and Bill Guthrie supervised the work on Section 3. For the Corps of Engineers, Vincent Watson is the area engineer, and W. H. Auchard is the assistant area engi-THE END

#### **NOW-AIR TOOLS WHEN NEEDED**



Worthington's Guaranteed Availability Plan keeps a full complement of tools on the job even if some are in the shop for checkup or repair. All you do is: 1) bring your hand-held Blue Brute air tool to your Worthington distributor. 2) While it's in his shop he will lend you another tool.

See your nearest Worthington distributor for complete details about the Guaranteed Availability Plan. Worthington Corporation, Holyoke, Massachusetts.



For more facts, use Request Card at page 18 and circle No. 445







Concrete for a section of the Hartford-Springfield Expressway in Connecticut is done by this Lewis float-finisher, which handles transverse finishing with double screeds and floating with a V-shaped float suspended from rear hangers. The float can be raised or lowered by the operator.

SPECIFY...
DRILLING EQUIPMENT
WITH
BUILT-IN
OUALITY-DEPENDABILITY





### YOU'LL END UP WITH THE PROFITS YOU'VE LOOKED FOR

Yes, you can buy ordinary drilling equipment and you'll probably save money...but in a short time the efficiency of the machine will drop, the rods will be worn and bent, the waterswivels will leak, the casing will be broken, the dependability you counted on will not be there. Instead, you'll be required to spend large amounts of money bringing comparatively new equipment back up to par.

If you are looking for drilling machinery and equipment that is built for Quality ... not for Price, specify and purchase SPRAGUE & HENWOOD: dependable...efficient... proven in the field.

Write, giving full particulars on your problem, and the correct brochure or catalog will be sent to you immediately.

Look for our emblem ... It's your Seal of Quality

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Export Division: Sprague & Henwood International Corporation, 11 W. 42nd St., New York, N.Y.

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One rig, two operations:

## Float-finisher on roadway paving

A connecticut contractor paving a 3-mile section of the Hartford-Springfield Expressway just north of the Connecticut River got excellent results with a Lewis float-finishing machine. Arute Bros., Inc., New Britain, Conn., decided to use this relatively new machine on the \$2,761,000 job after learning of strong contractor acceptance of the rig for airfield paving projects.

#### Paving train

The paving train, which averaged about 3,000 linear feet of 12-footwide, 9-inch-thick pavement per 10-hour day, was led by a Koehring 34-B riding outside of the forms. The paver

dumped concrete batches between forms and, by using its striptrimmed the mix to 2½ inches see the 9-inch steel forms. The crew the placed welded-wire reinforcing.

The paver had to back up to pay concrete over the wire reinform. The mix was spread by a Blaw-R spreader riding the forms. Hand brators were used behind the rig consolidate the mix adjacent to forms.

Following the spreader, a En-Knox double-screed transverse is isher smoothed off the 9-inch surface. Immediately behind the a was the Lewis float-finisher.

(Continued on page III)

NEW
Truco
JOBMATCHED
SAWS
AND
BLADES
CUT
SAWING
COSTS
LOOK
FOR
THIS
MARK



Here's a quick, easy way to save money. On your next masonry sawing job, see your Truco distributor and get Truco JOB-MATCHED Blades—matched to your job for cutting speed, blade life, safety, economy. He has the exact combination that you want and it will save you time and money. See those new Truco JOB-MATCHED Saws, too—the most versatile saws ever built. Write for distributor's name and literature. TRUCO MASONRY DRILLING DIVISION, Wheel Trueing Tool Co., 15B-3200 W. Davison, Detroit 38, Michigan

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ber Drill Co., Inc
GRUCE ASPHALT AND COMPACTION EQUIPMENT
Roadsweepers,
Sheepsfoot rollers
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Asphalt Distributors
Pneumatic rollers, self- propelled or trailed

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EX TO ADVERTISERS

	Inc. 1	28
Black Brothers Co., Braden Winch Co.		51
Browning Mfg. Co.		01 62
Buffalo-Springfield	Roller Co	41
Braden Winch Co. Browning Mfg. Co. Brunner & Lay, Inc Buffalo-Springfield Burch Corp. Butler Bin Co.		61
Comptell Detectable	6 C.t. C. 1	
Campbell Detachab Cardinal Scale Mfg. Caterpillar Tractor C Chicago Pneumatic City Engineering C Clark Equipment C	Co	20
Caterpillar Tractor C	e. 7, 15, 19, 20,	21
Chicago Pneumatic	Tool Co 1	74
Clark Equipment C	o 4th Co	ver
Clark Equipment C Cleveland Trencher Colorado Fuel & Iro	Co 1	73
		44
Construction Machi Continental Motors Continental Rubber Contractors Service.	nery Co 1	14
Continental Rubber	Works 1	21
Contractors Service	Ltd 1	32
Curtiss-Wright Corp	Insert, pages 53.	54
Dana Corp.  Davey Compressor Detroit Automotive Differential Co. Dixon Valve & Co. Dodge Div., Chrysle Dudgeon, Inc., Rich Duff-Naton Co.	48,	49
Davey Compressor	Co 1	13
Differential Co	······ l	34
Dixon Valve & Cou	spling Co 1	38
Dudgeon, Inc., Rich	ard 1	48
Part-Housen was		22
Dunham Mfg. Co.		47
Eagle Iron Works . Economy Forms Cor	p	66
Ellis Mfg. Co., Inc		52
Etnyre & Co., E. D.	119, 1	70
Economy Forms Con Ellis Mfg. Co., Inc Essick Mfg. Co Etnyre & Co., E. D. Euclid Div., GMC 6	4, 65, 108, 109, 1	15
Firestone Tire & R Ford Motor Co. (In Ford Motor Co. (T Forney's, Inc. Foster Co., L. B. Fuller Mfg. Co. Funk Mfg. Co.	ubber Co	46
Ford Motor Co. (In	rucks) 82	83
Forney's, Inc.	1	04
Foster Co., L. B	44 AF 1	30
Funk Mfg. Co		28
Galion Iron Works	& Mfg. Co 1	45
Gar-Bro Mfg. Co.		62
Gardner-Denver Co	us, Inc 00,	84
General Electric Co	50,	51
General Tire & Ru	bber Co	16
Gentex Corp	77 79	16
Gar Wood Industric Gardner-Denver Co General Electric Co General Engines Co General Tire & Ru Gentex Corp. Goodrich Co., B.F. Good Roads Machii Goodwar Tire & Ru	nery Corp 1	32
Good Roads Machi Goodyear Tire & Ri Grace Mfg. Co., W Gray Company, In Greenville Steel Ca Greer Technical In Griffin Wellpoint C Gulf Oil Corp.	abber Co	5
Gray Company, In	c 1	26
Greenville Steel Car Green Technical In	r Co	44
Griffin Wellpoint C		53
	orp	
Hale Fire Pump Co Hancock Mfg. Co.	(Canada &	05
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp.	(Constr. &	05 161 34
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Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex	(Constr. &	105 161 34 149 161 52 150 142
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Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spec	(Constr. &  (Welding  crew Co.  ling Co.  tron, Inc.  Co.  60,	105 161 34 149 161 52 150 142 160 61 27
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harrischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex. Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spec	(Constr. &  (Welding screw Co. strong, Inc. Co. Go. 60, cialties Co. strong it is a strong it is	105 161 34 149 161 52 150 142 160 61 27
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Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Dril Homelite Div., Tex. Horton Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spe. Hyster Co. Igloo Corp. Insley Mfg. Corp. International Harve (Trucks)	(Constr. &  (Welding Screw Co. ling Co. tron, Inc. Co. G. 60, cialties Co. 29, 31, 33, 156, oster Co.	34 49 61 52 50 61 42 60 61 27 154 48 166 137
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Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Hobart Brothers Co Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spet Hydraulic Unit	(Constr. &  (Weiding  Constr. &  Ling Co.  Lin	105 161 34 49 161 152 150 61 127 154 42 148 166 166 137 119 133 146 133 146 133 146 133 146 133 146 133 146 146 153 146 147 147 147 147 147 147 147 147 147 147
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Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Howard Machine S Hobart Brothers Ce Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Special Horten Hydraulic Unit Special Horten Horte	(Constr. &  (Weiding  Constr. &  Constrom, Inc.  Solution Constrom  Constrom, Inc.  Constrom,	05 61 34 49 161 550 42 160 161 27 160 161 27 17 18 17 18 18 18 18 18 18 18 18 18 18 18 18 18
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spe. Jalon Corp. Insley Mfg. Corp. International Harve (Trucks) Johns-Manville Col Johns-Manvil	(Constr. &  (Welding crew Co. ling Co. tron, Inc. Co. G. 60, cialties Co. 29, 31, 33, 156, 18ster Co. 86, (Celite Div.) rp. (Celite Div.) rp. (Transite  C. G. Insert, pages 71, Div., Baldwin- Corp. Inc. Insert, pages 35	105 161 34 49 161 155 160 161 125 160 161 127 148 163 163 170 183 183 183 184 185 185 185 185 185 185 185 185 185 185
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spe. Jalon Corp. Insley Mfg. Corp. International Harve (Trucks) Johns-Manville Col Johns-Manvil	(Constr. &  (Welding crew Co. ling Co. tron, Inc. Co. G. 60, cialties Co. 29, 31, 33, 156, 18ster Co. 86, (Celite Div.) rp. (Celite Div.) rp. (Transite  C. G. Insert, pages 71, Div., Baldwin- Corp. Inc. Insert, pages 35	05 661 34 49 661 550 42,660 661 27,74 48 666 37 70 40 133 134 135 135 135 135 135 135 135 135 135 135
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Hoster Beutenen Bros. Drill Homelite Div., Text Horton Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spet Jaeger Machine Co. Johns-Manville Co. Johns-Manville Co. Johns-Manville Co. Johns-Manville Co. Lot Spet Hydraulic Unit Spet Hydraulic Co. LeTourneau, Inc., Relley Machine Din Kolman Mfg. Co. LeTourneau, Inc., Relay Machine Din Lima Constr. Equip Massey-Ferguson II	(Constr. &  (Welding icrew Co. ling Co. tron, Inc. Co. G. 60, cialties Co. 29, 31, 33, 156, ester Co. 86, b. rp. (Celite Div.) rp. (Transite  Co. Insert, pages 71, Div., Baldwin- Corp. Inc. Insert, pages 35 cool Co.	34 49 161 52 162 163 164 165 160 161 160 161 161 161 161 161
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spet H	(Constr. &  (Weiding  icrew Co.  ling Co.  tron, Inc.  Co.  G. 60,  cialties Co.  sster Co.  29, 31, 33, 156,  sster Co.  86,  rp. (Celite Div.)  rp. (Transite  c.  R. G.  Insort, pages 71.  Div., Baldwin- Corp.  Inc.  L. Insert, pages 35.  col Co.  dustrial Div.  Co.  Co.  Corp.	34 49 61 52 60 61 52 60 61 62 63 63 64 66 66 67 70 70 70 70 70 70 70 70 70 7
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spe. Jelos Corp. International Harve (Trucks) Johns-Manville Co. Johns-Manville Co. Johns-Manville Co. Johns-Manville Co. Johns-Manville Co. Katolight Corp. Kelley Machine Di Kolman Mfg. Co. LeTourneau, Inc., R LeTourneau-Westie Lima Constr. Equip Lima	(Constr. &  (Welding  icrew Co.  ling Co.  tron, Inc.  Co.  G. 60,  cialties Co.  29, 31, 33, 156, 1816  sster Co.  86, 186, 186, 186, 186, 186, 186, 186, 1	05 661 34 49 161 550 42 160 661 27 40 661 37 87 119 70 40 133 134 135 135 137 137 137 138 138 138 138 138 138 138 138 138 138
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spet Lima-Hamilton Unit Spet Hydraulic Unit Spet Lima-Hamilton Unit Spet Lima-Hamilton Unit Spet Lima-Hamilton Groupany Massey-Ferguson In McKinsey Drilling McKinsick Products Mobile Office, Inc. Mobile Office, Inc.	(Constr. &  (Weiding  icrew Co.  ling Co.  tron, Inc.  Co.  G. 60,  cialties Co.  sster Co.  29, 31, 33, 156,  sster Co.  86,  rp. (Celite Div.)  rp. (Transite  c.  R. G.  Insort, pages 71.  Div., Baldwin- Corp.  Inc.  Linsert, pages 35.  col Co.  corp.  dustrial Div.  Co.  Corp.  al Joint Div.  Co.	05 661 34 49 661 550 42,660 661 27 448 666 37 70 40 40 41 48 48 48 48 48 48 48 48 48 48 48 48 48
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Howard Machine S Hobart Brothers Co Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spei Hortenational Harve (Trucks) Jaeger Machine Co Johns-Manville Coi Johns-Manville Johns-Manvil	(Constr. &  (Weiding  Corew Co.  Ling Co.  Lin	105 161 34 49 161 162 162 163 163 164 165 166 167 167 168 168 169 169 169 169 169 169 169 169
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Howard Machine S Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spet Hydraulic Corp. Johns-Manville Co Johns-Manville Littleford Brox., Int Maginniss Power T Malsbary Mfg. Co. Miniman Mfg. Co. Littleford Brox., Int Mydraulic Co Johns-Manville Littleford Brox., Int Mydr	(Constr. &  (Weiding  Corew Co.  Ling Co.  Lin	34 49 161 52 162 163 164 165 167 167 167 167 167 167 167 167
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Howard Machine S Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spet Hydraulic Corp. Johns-Manville Co Johns-Manville Littleford Brox., Int Maginniss Power T Malsbary Mfg. Co. Miniman Mfg. Co. Littleford Brox., Int Mydraulic Co Johns-Manville Littleford Brox., Int Mydr	(Constr. &  (Weiding  Corew Co.  Ling Co.  Lin	34 49 161 52 161 34 49 161 52 161 52 161 161 161 161 161 161 161 16
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horton Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spel Hyster Co. Igloo Corp. Insley Mfg. Corp. Insley Mfg. Corp. International Harve (Trucks) Johns-Manville Col Jay Division Johns-Manville Col Johns-Manville Col Johns-Manville Col Pipe Div.) Johnson Co., C. S. Joy Mfg. Co. Katolight Corp. Kalley Machine Dh Kolman Mfg. Co. LeTourneau, Inc., R LeTourneau-Westie Lima Constr. Equip Lima-Hamilton Lister-Blackstone, Littleford Bros., Int Maginniss Power T Malsbary Mfg. Co. Martin Company Massey-Ferguson In McKinney Drilling McKissick Products Mobile Office, Inc. Naylor Pipe Co. Noble Company Northwestern Steel Olivor Corp. Owen Bucket Co.	(Constr. &  (Welding icrew Co. ling Co. tron, Inc. Co. G. 60, cialties Co. 29, 31, 33, 156, 156, 156 156 156 156 156 156 156 156 156 156	34 49 161 34 49 161 155 160 161 160 161 160 161 160 161 161
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hobart Brothers Co Hobart Brothers Co Hoffman Bres. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Hubbr-Warco Co. Hydraulic Unit Spet Hydraulic Corp. Hydraulic Conpany Massey-Ferguson In McKinney Drilling McKinsick Products Mechanics Univers Mobile Office, Inc. Naylor Pipe Co. Noble Company Northwestern Steel Oliver Corp. Owen Bucket Co. Parsons Co.	(Constr. &  (Weiding  icrew Co.  ling Co.  tron, Inc.  Co.  G. 60,  cialties Co.  sster Co.  29, 31, 33, 156,  sster Co.  86,  rp. (Celite Div.)  rp. (Transite  Corp.  Insort, pages 71.  Div., Baldwin- Corp.  Inc.  Linsert, pages 35.  col Co.  dustrial Div.  Co.  Corp.  al Joint Div.  Co.  Gorp.  Gorp.	34 49 161 52 161 34 49 161 52 161 52 161 161 161 161 161 161 161 16
Hale Fire Pump Co Hancock Mfg. Co. Harnischfeger Corp. Mining Div.) Harnischfeger Corp. Div.) Harnischfeger Corp. Div.) Hartford Machine S Hobart Brothers Co Hobart Brothers Co Hobart Brothers Co Hobart Brothers Co Hoffman Bros. Drill Homelite Div., Tex Horten Equipment Hough Co., Frank Huber-Warco Co. Hydraulic Unit Spe. Jagor Machine Co Jay Division Johns-Manville Co Lobert Corp. Kelley Machine Di Kolman Mfg. Co. LeTourneau, Inc., R LeTourneau, Inc., R LeTourneau-Westie Lima Constr. Equip Lima-Hamilton Lister-Blackstone, Littleford Bros., Int Maginniss Power T Malsbary Mfg. Co. Martin Company Massey-Ferguson In McKinney Drilling McKissick Products Mechanics Univers. Mobile Office, Inc. Naylor Pipe Co. Noble Company Northwestern Steel Oliver Corp. Owen Bucket Co.	(Constr. &  (Welding crew Co. ling Co. tron, Inc. Ce. G. 60, cialties Co. 29, 31, 33, 156, setter Co. 86, coster Co. 87, 88, 88, 88, 88, 88, 88, 88, 88, 88,	34 49 161 520 661 550 42 661 57 87 1135 70 403 134 135 135 135 135 136 137 137 138 138 138 138 138 138 138 138

ichmond Screw Anchor Co., Inc. 139 idley & Co., Inc. 168 ivinius, Inc. 150 ockford Clutch Division 116 ogers Brothers Corp. 147 olcor Div., Rosco Mfg. Co. 134 oss Porta-Plant 159	Texaco Inc. (Lubricants)   8, 9
sigen Derrick Co	
mplicity System Co. 13 nclair Refining Co. 127 nuthern Tire Co. 123 nuthwest Welding & Mfg. Div. 11 prague & Henwood, Inc. 172 anco Mfg. & Sales, Inc. 140 landard Oil Co. (Indiana) 130, 131 ang Corp., John W. 104 enberg Mfg. Corp. 168	Union Metal Mfg. Co. 81 Unit Crane & Shovel Corp. 98, 99 United Steel Fabricators, Inc. 152 Universal Form Clamp Co. 100
	Van Brush Mfg. Co., Inc.         147           Viber Company         68           Vibro-Plus Products, Inc.         124           Victor Equipment Co.         55
rephens-Adamson Mfg. Co 40 roody Co	Waukesha Motor Co.         120           Wheel Trueing Tool Co.         123, 172           Wickwire Spencer Steel Div.         102, 103           CF&1 Corp.         102, 103           Williams Mfg. Co., Hugh B.         159           Winslow Scale Co.         145           Wisconsin Motor Corp.         151           Wisconsin Trailer Co., Inc.         40           Wix Corp.         12           Worthington Corp.         171
sperior Concrete Accessories, Inc. 125	
exaco Inc. (Asphalt) 2nd Cover	Yuba Consolidated Industries, Inc 11



### Cleveland J-40 digs shale and rock 3-5 feet deep for highway drainage

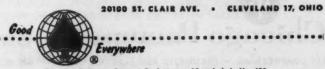
THE JOB: 20 miles of drainage trenching in both inner and outer shoulders of five miles of dual highway for the relocation of U.S. Route 25 near Middletown, Ohio.

CONDITIONS: trench to be cut to grade, 18 inches wide, 3 or 5 feet deep depending on inner or outer shoulder, through very densely compacted shale and rocky material, further densified because much of the grade carried hauling equipment all through a winter, spring and summer.

PERFORMANCE: despite need to replace worn bucket teeth more frequently than usual because of the tough digging, the Cleveland J-40 dug the trench to accurate grade at the rate of 1,800 to 2,000 feet per 9 hour day.

- Stability—an wide-spaced crawlers, 1000-hour-lubricated
- 100% control of every operation at
- V conveyor for faster, higher, more efficient spoil discharge
- J-40 FEATURES: Pulley-enclosed dual, independent, conveyor drive
  - · Automatic conveyor shifting from side to side
  - Over 30 non-slipping digging speeds
  - Digs trench 171/2 to 30 inches wide, down to 51/2 feet deep.

#### The CLEVELAND TRENCHER Co.



e Request Card at page 18 and circle No. 450

173



A Koehring pover uses its strike-off to trim the mix to 2½ inches below the 9-inch steel forms so that welded-wire reinforcing can be placed. It backs up to place the additional concrete. Spreading is done by a Blaw-Knox rig.



Hand vibrators hooked to the Blaw-Knox spreader consolidate concrete next to the forms. A Blaw-Knox double-screed transverse finisher follows the spreader; may in line is the Lewis machine.

NEW **CP-124** DEMO makes a POINT of

Specify a CP Demo Tool and you're ready to lick ANY JOB... ANY TIME... ANYWHERE

NEW CP-124 DEMO has body-contoured backhead for easier handling. Beefed up muscle for prying power. Gooseneck swivel lets operator use tool in any position with-out hose interference. Short length gives better balance...easier handling. Shock-proof steel retainer. Four-bolt backhead.

You name the job, and the "124" will give you the fastest, easiest action you've ever handled. It's an 80-pound class Demo, yes...but it packs more shattering punch per pound than any other demo on the market. It's so perfectly balanced, so soundly designed your men will handle it with the jarless ease of a lightweight tool.

It rides easy, but it hits hard! Unmatched for balance and solid reliability. Try out the CP-124, and you'll have to agree with us: it's the best heavy-duty demo you can get.

Get complete information on the New CP-124 Demolition Tool, write to your CP equipment distributor. Ask for a copy of SP-3260. Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17. N. Y.

These Service-Proved CP Demo's are an industry standard.





CP-117 puts profit in paving breaking.



Lightweight CP-113 hits hard, handles safely.

hicago Pneumatic & East 44th Stroot, New York 17, N. Y.

AIR COMPRESSORS . PNEUMATIC AND ELECTRIC TOOLS . AIR-BLAST BITS . REICHdrills . ROCK DRILLS For more facts, use Request Card at page 18 and circle No. 451

#### Suspended screeds

(Continued from page 172)

This machine differs from the co ventional type of finisher in that two transverse screeds are suspen from the frame rather than end supported by the steel side forms, ! handles the concrete surface float with a rear-mounted V-shaped flow This is also suspended from two hangers that can be raised or lower by the machine operator.

Because of this suspension feats the machine is able to finish float the surface of the slab regan less of any irregularities in the form

Contraction joints were formed 40-foot centers by forcing metal stri into the concrete slab and remo them after the Lewis machine

Concrete curing was handled by or ering the slab with Sisalkraft cur paper for a period of 14 days. T forms were stripped manually, pit up by an overhead winch on a tru and hauled ahead of the paying tri Here, they were again set in place An air hammer powered by a trui mounted compressor drove the le

After forms were set, the b course between them was fine-grade by a Cat No. 12 grader equipped wit Roadgrader Gauge blade extension

#### **Rotch plant**

The batch plant turning out the mix for the paver was located no the center of the job. It consisted of a Blaw-Knox 3-compartment agen gate bin, charged by a Bucyrus-Eri 38-B crane, and a Blaw-Knox cemes silo. The silo was located adjacent to a rail spur used by bottom-dump mi cars in making deliveries.

Cement was transferred from t rail cars by an under-track hopp that fed a screw conveyor charging the enclosed bucket elevator. To Ford batch trucks, each with a 2-yard capacity, hauled the mix to the pave

Jim Arute. Sr., was the super tendent for Arute Bros., and Charl Preli was the resident engineer the Connecticut State Highway D

THE B

# Jack-of-all-Jobs... ECONMOBILE 620

Lift 30'6"
 Capacity 4000 lbs.
 Greatest Reach in the Field

BRICKS, BLOCKS, TILE and MORTAR. Many users report that an ECONMOBILE will reduce general labor costs 70-80% — five out of every seven laborers.

### EVERYWHERE and EVERYTHING

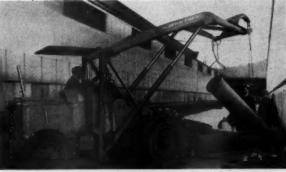
No one can say the high lift—long reach, ECONMOBILE is too specialized. From morning til night it's busy with a list of jobs as long as your arm... from supplying brick, block, concrete, mortar, to lifting and carrying everything in a building up to 4000 lbs. Better check up if you haven't got one or more—in the hands of your competitors it's your nastiest low bid problem. Pay for itself? Give us the wages of just two laborers for one year—we'll give you an Econmobile.



POUR WALLS, COLUMNS, ROOFS and FLOORS takes only the small investment in a concrete hopper and a big return in low cost nimble handling.



CHARGING BATCH PLANTS is just one of dozens of odd and unusual jobs that the ECONMOBILE does to save on your expensive manpower.



WORK WORK WORK. This is just one illustration — handling dust and fume control ductwork at a new Olin-Mathieson plant. Pick up, clean up, a full line of quick-change attachments are available including dozer blade, general purpose bucket, crane hook and crane boom.



MERICAN ROAD EQUIPMENT CO.

4205 North 26th St.

Omaha, Nebraska

For more facts, use Request Card at page 18 and circle No. 452

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Highway D



### Strips 2500 yds of asphalt in 8 hours

262 hp Michigan Tractor Shovel helps V. Ottilio cut costs 50%

All over the country, enterprising contractors are finding Michigan Tractor Shovels can effectively handle jobs once considered much too tough for rubber-tired equipment.

Here's a case in point.

V. Ottilio & Sons, Paterson, New Jersey, widening and resurfacing a 2½ mile stretch of U.S. Route 46 near Paterson, used one of their five Michigans, a 262 hp Model 275A, with 22,000 lb lift capacity and 4½ yd bucket, to rip up and load old pavement . . . plus handle excavation for the new roadbed.

Pavement handled, mostly asphalt shoulder cover, averaged 4 to 6 inches thick—up to 9 inches in some places—weighed about 3200 lbs per cubic yard. Ottilio found the big Michigan, working alone, handled the job 50% cheaper than could a combination of machines.

#### Michigan replaces swing shovel, crawlers

Before the Michigan started work, Ottilio tried a 1¾ yd swing shovel and a pair of crawler pushers. Production was good, but not good enough. So, for more loading capacity, in came the Michigan. It worked so well, the other rigs were taken off the job. Then, contractors thought they'd speed things still further by adding a 45,000-lb-class crawler. This move proved unnecessary! The increase was so small the crawler was retired and the Michigan did the entire job!

#### Versatile unit handles topsoil, old pavement, rough-grading

First, the 28 mph Tractor Shovel placed barricades and flashing-light stanchions. Then it stripped and truckloaded top soil. Next, it broke out and loaded 4 lanes of old pavement. Next

For more facts, use Request Card at page 18 and circle No. 453

came excavation and loading out of a dirt in the center island. Last, the Michigan rough-graded sub-base for the new 6-lane highway to 12 inches below existing grade. Stripping and loading production ran as high as 3,00 bank yards in 8 hours. It averaged 18 truckloads, 2,500 yards a day—compared to 1,500 yards the old way.

Like Ottilio & Sons, many Michigan owners are finding this Tractor Shovel will improve production on jobs never before tried on rubber. For proof, ask your Michigan Distributor to demonstrate. You name the job!

Michigan is a registered trademark of

### CLARK EQUIPMENT COMPANICONSTRUCTION Machinery Division

CLARK EQUIPMENT 2407 Pipestone Road Benton Harbor 32, Michigan

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50%

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